

3<sup>rd</sup> International Conference on

# Traditional Medicine Phytochemistry and Medicinal Plants (Online Meeting)

**November 2-4, 2020**



**TRADITIONAL  
MEDICINE**

# Day - 1

## Keynote Talk

### Phytotherapy and Globalization - History, Chances, Problems

Rainer Stange

*Charité University Medicine Berlin and Immanuel Hospital, Germany*

#### Abstract

Exchange between people of different cultures has always included practices and knowledge of healing. It thus is not surprising, that growth and use of medicinal plants has been spread all over the world over centuries. In the last decades, compilations of this processes have lead to amazing results: e.g. appr. 80.000 out of appr. 250.00 flowering species have ever been used for medicinal purposes. Numerous examples of plant-derived compounds used in chemically defined drugs on the one hand as well as present day worldwide use of many kinds of phytotherapy illustrate the benefits resulting from these anthropological experiences. According to WHO, appr. 80% of the world population depend on Traditional Medicines as the first health care deliverer and thus to a considerable contribution on phytotherapy. It seems challenging to cooperate on an international scale to cope with health delivery to all regarding regionally predominating spectra of morbidity and economic conditions. While phytotherapy in the industrialized countries is to respect benchmarks in efficacy and product quality set by conventional drug delivery and enforced by drug administrations, obviously these are not applicable in large parts of the world when considering the use of locally grown medicinal plants. Still, modern science can contribute to improve use of known medicinal plants as well as developing use e.g. for new indications like type 2 diabetes, resp. metabolic syndrome, that were almost unknown to traditional practitioners.

#### Biography

Dr. Rainer Stange is an internist and expert in natural healing and physical therapy. He is also a graduate physicist. He has been working as a doctor in the field of natural medicine since 1984, since 2001 he belongs to the Department of Natural Medicine of the Immanuel Hospital Berlin, from 2009 to 2017 as Chief Physician. He also worked at the University Outpatient Clinic Wannsee and is currently researching at the Immanuel Hospital Berlin as part of the endowed professorship for clinical naturopathy at the Institute for Social Medicine, Epidemiology and Health Economics of the Charité Universitätsmedizin Berlin.

### Session-1

\* Traditional Medicine: Clinical and Research Studies \* Chinese, Japanese and Korean Traditional Medicine

### Signal Quality Evaluation of Single-Period Radial Artery Pulse Waves Based on Machine Learning

Yiqin Wang

*Shanghai University of Traditional Chinese Medicine, China*

#### Abstract

**Background:** Pulse-taking is an important approach to understand the disease condition and differentiate syndrome patterns by feeling the patients' pulsation with the physicians' fingers. The development of traditional Chinese medicine diagnostics enables physicians to collect and analyze radial artery pulse wave signals objectively. Periodic radial artery pulse signals are subsequently decomposed

into single pulse wave periods for physiological parameter evaluations. However, abnormal periods frequently arise due to external interference, the inherent imperfections of current segmentation methods, and the quality of the pulse wave signals.

**Objective:** The objective of this paper was to develop a machine learning model to detect abnormal pulse periods in real clinical data.

**Method:** Various machine learning models, such as k-nearest neighbor, logistic regression, and support vector machine, were applied to classify the normal and abnormal periods in 8561 segments extracted from the radial pulse waves of 390 outpatients. The recursive feature elimination method was used to simplify the classifier.

**Results:** It was found that a support vector machine model with five input features can achieve a satisfactory result. The area under the receiver operating characteristic curve from the test set was 0.9920. In addition, these classifiers can be easily interpreted.

### Biography

Prof. Yiqin Wang is the leader of Shanghai Key laboratory of Health Identification and Assessment, Laboratory of Traditional Chinese Medicine Four Diagnostic Information at Shanghai University of Traditional Chinese Medicine, China. He focuses on objectification and standardization of traditional Chinese medicine diagnosis.

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## Cultural and Ecological Significance of Odonata (Insecta) to the T'boli of Lake Sebu, Mindanao, Philippines

Rizalyn B. Cudera

*Sultan Kudarat State University, Philippines*

### Abstract

Lake Sebu in Mindanao, Philippines, covered by the Allah Valley Protected Landscape, is home to the T'boli ethnolinguistic group. This study focuses on the cultural and ecological significance of the Odonata (insect order of dragonflies and damselflies) to the T'boli people who are known to have a close connection to their natural environment. According to the T'boli who participated in-depth interviews and focus group discussions, the Odonate larvae of Family Libellulidae and Aeshnidae known as Kmimi and Ogong El respectively are handpicked by the village members as a food source shared in the community when resources are scarce. The Odonata larvae are also used to cure illnesses and are locally believed to be important components for a love potion. In agriculture, T'boli farmers utilize the adult form of Odonata known as Klowong as natural biocontrol agents. Moreover, the Odonata larvae are prominent images in T'boli oral literature, specifically folklore and lullabies, teaching the children the importance of maintaining a harmonious relationship with nature. The results show that the presence of endemic species of Odonata indicates a healthy freshwater environment in the area; thus, studies on the sustainable use and conservation measures of the Odonata should be conducted.

### Biography

Miss Rizalyn B. Cudera is a graduate of BS Biology and MS Biology from MSU-IIT, Iligan City. She also completed Master in Education (ICT) from Newcastle University, New South Wales, Australia. She is the Research Coordinator of the College of Teacher Education of Sultan Kudarat State University, ACCESS Campus. A Leader of the on-going PCAARD - funded research entitled: Practices of Entomophagy and Entomotherapy of the Manobo Dulangan, Teduray and T'boli Ethnolinguistic Groups in Sultan Kudarat and South Cotabato, Mindanao, Philippines.

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## In Vitro and In Vivo Effects of A Traditional Chinese Medicine (TCM) In Human Breast Cancer Cells

Yu-Te Liu

*Chung Shan Medical University, Taiwan*

### Abstract

**Background:** Breast cancer is the leading cause of cancer-related death in women worldwide. Although traditional Chinese medicine (TCM) is commonly used by patients with breast cancer, little is known about TCM prescriptions for breast cancer. This study investigated

the effects of a new TCM formula, T33, comprising Radix Kansui, *Rheum rhabarbarum*, *Paeonia lactiflora*, Jiangbanxia, and Zhigancao on breast cancer cells *in vitro* and *in vivo*.

**Methods:** To evaluate the effects of T33 on human breast cancer, HMEpiC, MDA-MB231 and MCF-7 cells were treated with different concentrations of T33 and then analyzed using MTT and Transwell migration assays. To elucidate the involvement of autophagy in the T33-induced death of MDA-MB231 and MCF-7 cells, immunofluorescence staining with LC3-II-specific antibodies was performed. Tumor xenografts were generated by subcutaneously injecting either MDA-MB231 or MCF-7 cells into BALB/c nude mice to determine the effects of T33 on these cell lines *in vivo*.

**Results:** The experimental results revealed that 0.1 mg/mL, 0.5 mg/mL, 2.5 mg/mL, 5 mg/mL and 10 mg/mL T33 significantly inhibited the proliferation and invasion of MDA-MB231 and MCF-7 cells. Moreover, significant autophagy was observed in MDA-MB231 and MCF-7 cells in the presence of 2.5 mg/mL, 5 mg/mL and 10 mg/mL T33. An animal study further revealed that both low (200 mg/kg) and high (600 mg/kg) doses of T33 inhibited the proliferation of xenografted breast cancer cells in BALB/c nude mice.

**Conclusion:** These findings demonstrate for the first time that T33 has potential in the treatment of breast cancer owing to its antiproliferative effects and induction of autophagy.

### Biography

Mr. Yu-Te Liu is Ph.D. candidate at Institute of Biochemistry, Microbiology and Immunology at Chung Shan Medical University. He received Master degree of Traditional Chinese Medicine, in 2010. He is Clinical TCM doctor in De-Yi TCM Clinic, since 2014. Attending TCM doctor in Changhua Christian Hospital, Changhua City, Taiwan, ROC (2008-2014).

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## Music Therapy for Health and Wellness- Clinician, Music Therapist and Researcher's Perspectives

### Sobana Jaiganesh

AIMST University, Malaysia

### Abstract

Modern health care delivery system considers bringing out a balance between the mind, body and the spirit of the patient all at the same time using non biomedical approaches. The theme of the presentation is to create awareness on the fundamental principles of music therapy and music medicine. It will clear the misjudgment regarding music therapy, that it can be delivered and experienced only by musically trained personnel. Explore the evidence based data on the therapeutic benefits and scope for research of musical interventions. To analyze the role of musical interventions and outcome in these settings on restoration of health, wellbeing and harmony. To understand that music therapy as an innovative allied health care profession within the umbrella of integrative medicine which works on the principle of treating the person as a whole and not just the disease. To create an understanding music therapy is not an alternate but complementary to the conventional treatment modalities. To share the music therapy research experiences of the presenter in diverse avenues and outcome observed in the physiological, psychological parameters. Few of them to be discussed are

Reduced situational anxiety during diagnostic and surgical procedures like upper Gastro Intestinal endoscopy. Improvement of pulmonary functions, reduction of dyspnoea level and perceived stress in an asthmatic patient. Improvement of cognitive skills in autistic child Alleviation of fear and enhanced cooperation during tooth extraction Reduced loneliness scale of elderly population in geriatric home.

### Biography

Dr. Sobana Jaiganesh is Medical Physiologist teaching basic sciences for Graduate medical students over a decade. She is qualified music therapist and a passionate researcher on the potential benefits of musical interventions. She conducted multiple clinical trials in autistic school, professional college and hospital settings. She published peer reviewed research articles on the behavioral, physiological and psychological outcome of music therapy. She developed a copyright Music therapy process for students wellness "MEETS - Musically Express your Emotions & Thoughts for Success".

## The Emerging Role of Some Ethnomedicinal Plant Materials as Antidiabetic Agent

Begum Rokeya

Bangladesh University of Health Sciences, Bangladesh

### Abstract

Diabetes mellitus has turned to a denunciation for public health due to dearth of adequate drugs to control diabetic conditions. Maintaining euglycemia is essential for delaying disease progression and preventing micro- and macrovascular complications of diabetes. Unfortunately, the current therapies are unable to control all of the pathological aspects of diabetes as well as their high cost and poor availability for many rural populations particularly in developing countries led to the realization of alternative therapies. It is well established that ethno-medicinal plants has health promoting effects in the management and treatment of diabetes. From the last few decades, our research group has been contributing their efforts to understand and explore the role of antidiabetic plants in the management and treatment of diabetes and the development of new therapies. So far more than 92 plants from Bangladesh and neighboring countries have been screened in normal, Type 1 and Type 2 diabetic model rats where the majority of plants showed significant blood glucose lowering effect, although they differed in the nature of the animal model and prandial states. Different plant extracts were tested with a combination of *in vivo* (acute and chronic study) and *ex vivo* techniques in nSTZ induced type 2 diabetic model rats to explore the underlying mechanism of antidiabetic effects. Some studies were conducted to understand the genetic and proteomic basis of antidiabetic effect of plants on the activation of AMPK-activated protein kinase pathway and the obtained result are surprising.

### Biography

Prof Begum Rokeya has completed her PhD in Pharmacology at the age of 28 years from Kyev Institute of Pharmacology and Toxicology, Ukraine. Currently, she is serving as the Dean, Faculty of Basic Science & Research Coordinator and Professor & Head, Department of Pharmacology, at Bangladesh University of Health Sciences (BUHS), Bangladesh. She has published 75 scientific papers in the peer-reviewed national and international journals & chapters in Books (4). She supervised/co-supervised 5 PhD, 3 MD, 2 MPhil and quite a large number of MS and BS (project) students in the field of pharmacology, Biochemistry, Chemistry and Bio-technology. She is super experienced in conducting experiments on rodent model in the field of diabetes where the plant based natural product is her key concern.

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## Prevention and Therapy of the Dry-eye-syndrome by Means of Acupuncture, Tuina/Acupressure, Qigong and Dietary Therapy

Sabine Zeitler

Societas Medicinae Sinensis ISCM, Germany

### Abstract

The dry-eye-syndrome is increasing in recent years because of many reasons: an aging population, new forms of working environment such as staring on computer, tablet or mobile phone screens and other factors like air conditioning, air pollution, eye surgeries or contact lenses. Additionally, physiological reasons, for instance hormonal changes, diabetes, a lack of vitamin A, allergies or rheumatoid diseases can cause the “sicca” or “dry-eyes-syndrome”. The Traditional Chinese Medicine offers several ways to prevent dry eyes. Treatments with self-acupressure, Qigong and special dietary support are useful. In case of a needed therapy acupuncture, Tuina-massage and herbal therapy can help to accompany western ophthalmological care. Recent evaluated studies and case studies will show the use of the TCM-therapies in ophthalmology.

### Biography

Dr. Sabine Zeitler is physiotherapist and practitioner of Traditional Chinese Medicine and Osteopathy. Since 2001 she is active in her own practice in Munich, Germany. Since 1996 she is member of the Societas Medicinae Sinensis (International Society for Chinese Medicine). Her education in Tuina, the manual therapy of the Chinese Medicine, was provided by Dr. John Zhou, Bad Pyrmont,

Germany, and Dr. Han Chaling, Rome, Italy. Since several years she teaches Tuina, Acupressure and Qigong within the framework of the education provided by the SMS - Societas Medicinae Sinensis. She's also author of several scientific articles and speaker at national and international conferences and congresses.

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## Photodynamic Therapy Effects of Rubus and Vaccinium Species in MCF-7 Breast Cancer Cells

**Blassan P George**

*University of Johannesburg, South Africa*

### Abstract

Breast cancer is a major threat to women's health and its incidence and fatality rate are gradually increasing. The pathogenesis of breast cancer is associated with genetic and environmental factors, as well as essential cellular pathways such as those controlling metabolisms, cell cycle progression, proliferation, and apoptosis. Photodynamic therapy (PDT) is a novel approach for the treatment of cancer and other related diseases. The aim of this study was to evaluate the phototoxic effects of *R. fairholmianus* and *V. nilgiriensis* extracts and 680 nm laser irradiation at different fluencies on MCF-7 breast cancer cell line. The exposure of extracts + laser 680 nm at 5-15 J/cm<sup>2</sup> reduced the viability, proliferation and increased the cytotoxicity in MCF-7 cells. On the other hand, the laser at 680 nm alone does not have a significant effect on MCF-7 cells. Whereas the combined treatment significantly upregulates the expression of various proapoptotic proteins and induced nuclear damage. Overall, it summarizes that, treatment with *R. fairholmianus* and *V. nilgiriensis* along with 680 nm laser irradiation is more cytotoxic and induced apoptosis in MCF-7 cells. This is the first report on anticancer effects of these medicinal plant extracts in combination with low-level laser irradiation and in future the compounds isolated from these extracts could be used as potent natural photosensitizers for the PDT of cancer.

### Biography

Dr. Blassan P. George is a Researcher at Laser Research Centre, Faculty of Health Sciences, University of Johannesburg, South Africa. His research interest highlights phyto photodynamic therapy of cancer. Currently he is investigating the effect of Rubus, Vaccinium, Melia and Dicoma species on various cancer cells, role of cannabidiol and homeopathic mother tinctures in enhancing the photodynamic therapy effects and phototoxic effect of photosensitizers on multi-drug resistant human cancer cell line. He has secured funding from National Research Foundation, South Africa, African Laser Centre and University Research Committee. He received international travel grants from DBT, NRF KIC and presented research findings in more than 20 international and national conferences. Dr George has supervised 8 masters, 2 doctorate students, and 1 postdoctoral research fellow. He has published 44 research articles in the peer-reviewed international journals and 11 book chapters and 2 conference proceedings to date. He has a Google Scholar H-index 13 and ResearchGate score 28.80.

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## Regulatory Function of Medicinal Plant *Epilobium hirsutum* L. and its Ingredient Ellagic Acid on Bile Acid Synthesizing CYPs

**Tuba Ege**

*European University of Lefke, Cyprus*

### Abstract

Phenolic and polyphenolic compounds that are founded in plants have a good reputation as they are fulfilling a crucial function to avert and treatment of disparate diseases. Excessive cholesterol is removed mainly through conversion to bile acids in mammals, cytochromes P450 initiate all quantitatively significant pathways of cholesterol metabolism and bile acid biosynthesis. This study was aimed to investigate the possible potency of medicinal plant *Epilobium hirsutum* L. (EHT) extract and its ingredient ellagic acid (EAT) on rat liver cholesterol and bile acid metabolizing enzymes. In addition to molecular studies, bioactive compound of EHT extracts was identified using Liquid Chromatograph-Mass Spectrometry (LC-MS) technique. The water extracts of EHT and EAT were injected intraperitoneally as 37.5 mg/kg and 20 mg/kg for 9 days, respectively. Then, *in vivo* effects of the EHT and EAT extract on rat liver cholesterol and bile acid metabolizing CYPs were analyzed by determining protein and mRNA expression levels using western blotting

and qRT-PCR techniques, respectively. In addition, serum cholesterol level of animals was determined. Based on doses used that applied in this study, EHT and EAT is quite safe and can be used for drug development without any toxicity.

## Biography

Dr. Tuba Ege is an Assistant Professor of Faculty of Health at European University of Lefke (from 15 November 2015). She was Visiting Scholar of Pharmacology at University of Michigan Medical School (1 March - 30 November 2013). She was Research Assistant at Middle East Technical University (October 2007 - September 2015).

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## Antimicrobial Activity of Traditional Medicine

### QiQi He

*Queen's University Belfast, United Kingdom*

### Abstract

Antimicrobial resistance (AMR) has become a serious global crisis and public health threat with significant societal implications worldwide. Resistance has been reported to nearly all clinical antibiotics including the last-resort antibiotics. In the past decade, we have witnessed a growing global effort to explore natural sources for new antimicrobial agents and alternatives to combat AMR. The purpose of this study is to investigate the potential antibacterial activity of traditional herbal medicine against several resistant pathogens included in the WHO priority pathogens list. The broth microdilution method was used to determine the susceptibility of resistant pathogenic strains to a total of 83 medicinal plants. Preliminary results show 45.78% of the screened plants had a minimum inhibitory concentration (MIC) below 1mg/ml against MRSA (NCTC 12493), with the lowest MIC of 7.8 ug/ml. One-third of the screened plants demonstrated a synergistic effect with vancomycin against MRSA. Some of the plants significantly lowered the MIC of vancomycin against MRSA. Remarkable growth inhibition of MRSA was also observed with some of the plants during the exponential growth phase, as revealed in kinetic studies. Those plant species that possess potent antibacterial activity may have potential to shape the future of medicine, veterinary practice, agriculture, and farming.

## Biography

Miss QiQi He is a third-year PhD student at the Institute for Global Food Security, Queen's University Belfast. Her first degree was in Clinical Medicine, which was obtained in China, followed by a Master degree in Molecular Biology and Biotechnology, qualified in Queen's University Belfast in 2017. Her doctoral studies focus on the evaluation of the antimicrobial activity of crude traditional medicine, assessment of cytotoxicity exerted from medicinal plants towards epithelial cells, and mechanisms of herbal plants against resistant pathogens.

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## Medicinal Plants Used by Women Assisted by the Family Health Strategy

**Lis Cardoso Marinho Medeiros<sup>1\*</sup>, Kellyane Folha Gois Moreira<sup>1</sup>, Teresinha de Jesus Aguiar dos Santos Andrade<sup>2</sup>**

<sup>1</sup>NUEPES-UNASUS - Universidade Federal do Piauí, Brazil

<sup>2</sup>NIAC-Instituto Federal do Maranhão – IFMA, Brazil

### Abstract

The use of medicinal plants is considered an ancient practice associated with popular knowledge. The study aimed to construct a Practical Guide on the medicinal plants most used by women of childbearing age (10 to 49 years old) assisted by the Family Health Strategy (ESF) in Bom Jesus-PI city. The study was of the prospective analytical quantitative nature. Thirty-six women of childbearing age from March 2018 to July 2018 participated in the study through semi structured questionnaires applied individually to the users in the Basic Health Units. The mean age was 32.5 ± 9.9 years; being the single majority 41.3%; 39.7% said they had studied between 9 and 11 years and 76.3% received up to a minimum wage. The prevalence of the use of the medicinal plants obtained was 87.5%, and 72.5% of the women interviewed answered that they always use medicinal plants and 14.9% sometimes use these plants. The ten

medicinal plants identified as the most used were: lemon grass (*Lippia alba* Mill.) (44.72%), green peppermint (*Villosa huds.*) (36.34%), mallow (*Malva sylvestris* L.) (16.46%), holy grass (*Cymbopogon citratus*) (11.18%), holy leaf (*Bryophyllum pinnatum*) (10.56%), vick mint (*Mentha arvensis* L.) (9.25%), cotton (*Gossypium herbaceum* L.) (9.94%), mastruz (*Chenopodium ambrosioides* L.) (9.94%), boldo (*Plectranthus barbatus*) (9.32%) and chambá (*Justice pectoralis*) (9.02%). In view of the results obtained it was possible to perform a critical analysis on the use of plants and it is hoped that the Practical Guide of Medicinal Plants can contribute to the knowledge of professionals and community.

## Biography

Dr. Lis Cardoso Marinho Medeiros is graduated in Nursing from the Federal University of Piauí (1984), graduated in Dentistry from the Federal University of Piauí (1991), master's degree in Natural and Synthetic Bioactive Products from the Federal University of Paraíba (1991) and doctorate in Nursing from the Federal University of Rio de Janeiro (2001). She is currently Full Professor of Biophysics at the Federal University of Piauí. She has experience in training human resources for SUS, with distance learning and herbal medicine. She is currently in the adjunct coordination of the Professional Master's in Women's Health and coordinates the Specialization in Family and Community Health. She is part of the Evipnet Network with the project she coordinates: Strategies to reduce Maternal Mortality in the state of Piauí and serves as Executive Coordinator of UNA-SUS-UFPI.

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## Catgut Implants in Acupuncture Points of a Patient with Porphyria

### Kelsy Arbiza

*School of Naturopathy of Uruguay, Uruguay*

### Abstract

**Introduction:** Acute intermittent porphyria (PAI) is a disease caused by a defect in the porphobilinogen deaminase enzyme that catalyzes the third stage of heme synthesis, that cause acute dysfunction of the central nervous system (CNS) autonomous and peripheral. Acupuncture could be a complementary mechanism in the treatment of Porfira patients due to its self-regulation mechanism.

**Method and Results:** In order to evaluate the therapeutic response to Catgut implantation treatment at acupuncture points, it's presented the clinical case of a female patient 43 years old, with a personal history of hypothyroidism, that at the age 33, in the course of her second puerperium debut with PAI, presenting motor sensory polyneuropathy, wakefulness depression and hyponatremia, requiring hospitalization in intensive care. During the next 3 years, she presents an average of two annual thrusts, which require hospitalization and responds favorably to hematin treatment. In 2014 she went to Acupuncture medical consultation. After evaluation and traditional diagnosis, treatment with Catgut implantation in acupuncture points is initiated. Since the beginning of treatment she has only had one hospitalization 6 months after the beginning. She was given a progressive deprescription of the medication she received, significantly improving the symptomatology. In this case, lasting remission of the could be obtained with the implantation of Catgut at acupuncture points.

**Conclusion:** Acupuncture could be considered in its comprehensive approach and especially the implementation of Catgut, for its prolonged effects, as a complementary technique in the treatment of patients with Porphyria. It has demonstrated to improve the symptomatology, decrease the frequency of crises and prolong the inter crisis period. Therefore, Acupuncture contributes to the self-regulation of the organism, improving the quality of life of people, their family, their environment and the system in which it develops.

## Biography

Dr. Kelsy Arbiza is a Physician graduated from the University of the Republic of Uruguay and holds a Postgraduate Degree in Phytotherapy from the International Foundation of Integrative Medicines (Cordoba, Argentina). Dr. Arbiza has more than ten years of experience in the practice of her profession in the State Health Services Administration (ASSE) and for other health providers as well. She has participated in community projects, coordinating and managing local networks with multidisciplinary teams. Dr. Arbiza currently works as family and community Physician at the Community Health Centre, belonging to the metropolitan primary care network. She is an active member of the community, participating in programs (childhood), childcare in polyclinics and chronic patient care. She is also involved in the coordination of the groups for elderlies, the reference team for gender-based violence and the primary care network



and Ministry of Health. In addition to her years of private practice regarding acupuncture, she also carries out a Physical Rehabilitation Service at Hospital Policial. She is a Professor of Traditional Chinese Medicine at the School of Naturopathy of Uruguay. She has more than eight years of experience and research regarding the Catgut Embudding Method.

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## A Melting Pot of Well-Being: An Ethnography of Maori Healing Practices

Lillian Trebein Brice

*Bucknell University, USA*

### Abstract

Drawing on contemporary anthropological approaches used by scholars of well-being and medical anthropology (i.e. Michael Jackson and Lisa Stevenson), I explore how indigenous healers in New Zealand blend “traditional” and “modern” elements to establish a creative and inclusive system. Specifically, I explore the use of herbal treatments, ritual chanting, and ceremonies that encapsulate Māori cultural values. I also explore the impact of biomedicine and New-Age wellness approaches on indigenous healing. I argue that Māori healing moves beyond the binary of “tradition” and “modern” as healers merge the past and present and combine the foreign and native. My research is based on published scholarly literature, participant observation I conducted during my semester abroad in Dunedin, New Zealand in Spring 2019, and semi-structured recorded interviews with tohunga (indigenous Māori healers). During my five-month stay, I spoke with tohunga, experienced indigenous ceremonies and karakia (ritual chanting) first-hand, and attended the Christchurch Healing Expo where I shadowed a Māori healer during a mirimiri (sacred ritual massage). My research demonstrates that it is impossible to fully separate Māori healing from other wellness systems because “indigenous” healing has always incorporated healing practices from other cultures. My honors thesis addresses the historical and cultural origins of Māori healing practices, how these practices integrate in contemporary society, as well as how the indigenous population perceives health. This research contributes to the anthropological study of wellness by reevaluating the meaning of “indigenous” healing and identity in contemporary New Zealand.

### Biography

Miss Lillian Trebein Brice is a recent graduate of Bucknell University with a BA in Sociology & Anthropology. She is Kentucky native who has always been drawn to cultural medicine, holistic health, and nutrition. She plan on pursuing a Master’s Degree in Community/ Public Health and career in Integrative Medicine. Her Honors include Summa Cum Laude Phi Beta Kappa Society, Vice President of Bucknell Chapter Meerwarth Prize for Anthropology in Action Bucknell Prize in Sociology.

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## Bilateral Facial Paralysis with Probable Cholestasis in a Paediatric Patient Resolved with Acupuncture; A Case Report

Alejandro Martinez Reyes

*Universidad Estatal del Valle de Toluca, Mexico*

### Abstract

The case of a 13-year-old patient exhibiting bilateral facial paralysis with a suggestive pattern of cholestasis will be presented, both pathologies very rare for a patient of that age with no underlying medical conditions. In the article written and published at Revista Internacional de Acupuntura we thoroughly describe the case and treatment followed with acupuncture and the results obtained, thus proving the efficacy of acupuncture in such an atypical case.

The presentation would consist on a quick but detailed introduction on the case, both explaining the clinical presentation with a complete analysis on the blood analysis and the clinical correlation to explain the suspicions of a non-clinically but biochemically probable cholestasis—and how we were able to resolve all the manifestations by the sole use of acupuncture, even after a long pharmacological treatment was performed with non-satisfactory results.

Aside from the medical aspects of the presentation, I would make emphasis on the importance of registering evidence of these atypical—yet relevant—cases for further evidence on the efficacy of complementary medicine. We believe it is important not only to conduct large-scale studies such as randomized or double-blind trials, but to publish and discuss important and relevant cases in which, given their uniqueness, would be impossible to gather enough cases to produce larger studies.

### Biography

Mr. Alejandro Martinez Reyes is recently graduated from college. He is trained in acupuncture, physical therapy and self-taught in the use of herbal medicine. He is very fond of clinical work in treating patients with various conditions with acupuncture and plant-based drugs.

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## Management of Climacteric Symptoms by Electroacupuncture and its Association with Calcitonin Gene-Related Peptide Modulation: A Case Series

### Camilo Alberto Pinzon Galvis

*Instituto Politécnico Nacional, México, Mexico*

### Abstract

Symptoms of menopause, mainly vasomotor symptoms, are a great challenge for modern and traditional medicine. Novel research is showing that the Calcitonin Gene-Related Peptide (CGRP) may be associated with the vasomotor symptoms. Our team in the National Polytechnic Institute in Mexico made a case series study to evaluate the Electroacupuncture (EA) on the modulation of climacteric symptoms, so we conduct measures of Menopause Rating Scale (MRS) and gene expression of CGRP in plasm of the women before and after EA. Initially were enrolled nine women with climacteric syndrome, without replacement therapy, psychiatric treatment, or acupuncture treatment in the last 3 months. The treatment consists of the application of 4Hz EA in Guanyuan (REN-4), Taixi (KID-3), Fuliu (KID-7), Sanyinjiao (SP-6), Neiguan (P-6), Shenshu (BL 23), and Pishu (BL-20); two times per week, in total 10 sessions. Climacteric symptoms diminish significantly after EA therapy and CGRP was downregulated after sessions. By the time, we got preliminary results that show EA treatment was associated with improvement in MRS and may be related to modulation of CGRP levels. The trial is still in course, and we expect that the sample gets bigger.

### Biography

Mr. Camilo Pinzón is a medical student in the human acupuncture specialty at the National Polytechnic Institute, México. He is in the last semester of his specialty. He is a Physician from Colombia National University. His specialty work deals with the effect of Electroacupuncture in symptoms of the climacteric syndrome and gene expression of Calcitonine Gene-related Peptide. He is the founder of the Chinese Study group of the National University of Colombia, a multidisciplinary group that works in themes of Traditional Chinese Medicine. His career objective is to be an academic researcher and work on integrative medicine.

# E-Poster Presentation

## The Effectiveness of Johrei can be Assessed in Stress-Treated Seeds: Johrei Restores the Health of Lettuce Seeds

Marcia Provinzano Braga Xavier de Melo

Korin Agriculture and Environment, Brazil

### Abstract

Johrei, known as noncontact healing technique, channels purported universal energy and has had countless positive reports of healing in humans. However, to overcome some of the limitations of studies on humans, this study evaluated the effect of Johrei on the viability and vigor of damaged lettuce seeds. Lettuce seeds were subjected or not subjected to heat stress to induce damage and subsequently treated or not treated with Johrei. The treated seeds were sown in expanded polystyrene trays containing substrate in a greenhouse, followed by evaluations of seedling emergence percentage (viability test) and emergence speed index (vigor test). The same treatments and evaluations were carried out after two years of storage. The experimental design was a randomized complete block design with a 4x2 factorial scheme (four Johrei treatments x two storage periods) with six replications. Damaged seeds and treated with Johrei before storage had a greater seedling emergence percentage (81%) and a greater emergence speed index (17,9) than seeds not treated with Johrei (41% and 4.8, respectively). After two years of storage, the results were similar. Johrei effectively preserved lettuce seeds health and the efficacy of Johrei can be assessed through its effects on the physiological potential of stress-treated seeds. Using live plants allows the benefits of Johrei to be evaluated without interference from the placebo effect.

### Biography

Dr. Marcia de Melo is a researcher in the field of seeds, Johrei and bio-inputs at Korin Agriculture and Environment. PhD in Botany-seed physiology from the Universidade Estadual Paulista (UNESP); Master in agronomy from the Universidade de São Paulo (USP); agronomist engineer (UFRRJ) and Johrei practitioner for 33 years. She was a researcher on topics related to seeds and Johrei and coordinated the production of certified organic seeds at the Mokichi Okada Research Center (CPMO). Marcia has experience in seed physiology and technology and plant breeding in the organic/natural agriculture system.

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## Oral Health and Phytotherapy for Women

Lis Cardoso Marinho Medeiros<sup>1</sup>, Kellyane Folha Gois Moreira<sup>1</sup>, Teresinha de Jesus Aguiar dos Santos Andrade<sup>2</sup>

<sup>1</sup>NUEPES-UNASUS - Universidade Federal do Piauí, Brazil

<sup>2</sup>NIAC-Instituto Federal do Maranhão – IFMA, Brazil

### Abstract

Comprehensive care for women of childbearing age has been the focus of policy development by the Ministry of Health to improve the quality of care. Oral health evidenced in the fertile period correlates with overall health and the transformations women experience during this period can affect overall health. Dental Health professionals should be responsible for dental care, using a differentiated approach, integrated with a multidisciplinary team, given the natural organic changes of this life cycle. The objective of this study is to evaluate the oral health of women assisted by the Basic Health Units of Luiz Correia, Piauí, through data collected in DATASUS in the municipality over a five-year series. Chi-square test or others that fit the analysis will be used for data analysis. Concomitant with the survey of demographic and socioeconomic conditions of the study group will be investigated phytotherapeutic plants with direct action on oral health in order to contribute indicative of use in caring for the oral health of women.

## Biography

Dr. Lis Cardoso Marinho Medeiros is graduated in Nursing from the Federal University of Piauí (1984), graduated in Dentistry from the Federal University of Piauí (1991), master's degree in Natural and Synthetic Bioactive Products from the Federal University of Paraíba (1991) and doctorate in Nursing from the Federal University of Rio de Janeiro (2001). She is currently Full Professor of Biophysics at the Federal University of Piauí. She has experience in training human resources for SUS, with distance learning and herbal medicine. She is currently in the adjunct coordination of the Professional Master's in Women's Health and coordinates the Specialization in Family and Community Health. She is part of the Evipnet Network with the project she coordinates: Strategies to reduce Maternal Mortality in the state of Piauí and serves as Executive Coordinator of UNA-SUS-UFPI.

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## Medicinal Plants an Alternative Searching for Chemical Compounds with Biological Activity

Francisco Farnum\*, Vielka Murillo

University of Panama, Panama

### Abstract

Around 28,000 medicinal plants have been recorded worldwide. Only 10% have been evaluated for their potential biological activity. Multiple medicinal uses are indicated for diseases such as: colds, headaches, kidney problems, anemia, digestive problems, circulatory problems, in short, a number of conditions. Panama is a country of great biological importance, considered one of the critical places ("Hot Points") in the world and ranks fourth among the 25 richest countries for plants in America. The flora of Panama remains an untapped source of new bioactive compounds and the potential for discovery of leading or bioactive compounds in medicinal plants is enormous.

With the aim of knowing the uses of medicinal plants in Panama, surveys were conducted with person in charge of family health care, this survey included parts of the plant selected and its use. Plants were correctly collected and identified by consulting the Herbarium of the University of Panama (PMA) and in all cases a reference was established. 99 species with 25 uses were reported during field work. Only the uses of plants cited with a frequency greater than or equal to 20% were taken into account, which are considered significant uses. Among the 15 plants with the greatest uses, the following species can be mentioned: *Anacardium occidentale* (diarrhea), *Chenopodium ambrosioides* (intestinal parasites), *Lantana camara* (flu), *Petiveria alliacea* (stomach pain), *Momordica charantia* (skin conditions), *Guazuma ulmifolia* (cold, cough), *Hamelia patens* (headache), *Eryngium foetidum* (chest pain), *Abelmoschus esculentus* (eye conditions), *Senna occidentalis* (sore throat), *Sida rhombifolia* (sprains), *Senna alata* (ringworm), *Sphagneticola trilobata* (bronchitis), *Jatropha curcas* (oral candidiasis), *Pluchea carolinensis* (neuronal and rheumatic applications). Comparing the uses of these plants with the existing literature of the Panamanian plant pharmacopoeia, it is concluded that phytochemical substances with biological activity have been detected for these plants.

## Biography

Dr. Farnum and Murillo currently work at the Centro Regional Universitario de Colón, Universidad de Panamá. They do research in Ethnobotany, Ecology and Botany. Their current project is "Socio-ecological bases for the sustainable management of parallel forest patches to via Boyd-Roosevelt, Panama". Both lectures Ethnobotany as well as Plant Ecology to undergraduate and postgraduate students. Have published extensively in the area of Plant Ecology and Ethnobotany in peer reviewed scientific journals and also written two books.

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## Anti-Inflammatory Effect of the Combinations of Two Species of *Salvia* (*Salvia ballotiflora* and *Salvia keerlii*) with Indomethacin in Tpa-Induced Mouse Ear Edema Model

Nimsi Campos-Xolalpa

The Metropolitan Autonomous University, Mexico

### Abstract

Medicinal plants have been an important source of pharmacologically active compounds for the treatment of different diseases such as inflammatory diseases<sup>1</sup>. Inflammation is a condition that occurs in different chronic-degenerative diseases such as arthritis or cancer. There are different drugs for its treatment such as non-steroidal and steroids anti-inflammatory drugs, however, they have adverse reactions<sup>2</sup>. An alternative for the treatment of inflammatory diseases are plants or a combination of plant extracts with drugs such as indomethacin. One of the objectives of these combinations is to obtain a better anti-inflammatory effect and reduction of adverse effects. Our working group demonstrated the anti-inflammatory effect of chloroform extracts of *Salvia Ballotiflora* (ECL)<sup>3</sup> and *Salvia keerlii* (SAKE)<sup>4</sup>. In the present work we probed, the combination of ECL or SAKE with indomethacin (IND) in combinations of 1:1, 1:3 and 3:1, was evaluated *in vivo* on TPA induced ear edema in mouse male CD1 mice. The combination between ECL + IND was observed an addition of the individual effects (Additivity) in all tested combinations, it can be considered as a strategy to reduce the INDO dose and replace it with ECL to achieve the same level of effect and fewer adverse reactions. In contrast, all tested combinations between IND with SAKE show an attenuated effect which is called the sub-additive effect, it appears that SAKE and indomethacin compete for the same molecular target.

### Biography

Miss Nimsi Campos-Xolalpa is currently working at Department of Biological Systems in Autonomous Metropolitan University Xochimilco unit, Mexico.

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## Cytotoxic and Anti-Inflammatory Activities of the Dichloromethane Extract of *Stevia viscida*

Nimsi Campos-Xolalpa, The Metropolitan Autonomous University, Mexico

### Abstract

The inflammation process is controlled by the release of extracellular mediators known as cytokines, this can be divided in proinflammatory (interleukin-1 (IL-1), IL-6 and tumor necrosis factor (TNF- $\alpha$ )) and anti-inflammatory (IL-10 and IL-12)<sup>1</sup>. Plants represent an important source for the development of novel anti-inflammatory and cytotoxic agents. One of this plant is *Stevia viscida*, commonly known as "Hierba de la Pulga"<sup>2</sup>. The objective of this work was to evaluate the cytotoxic and anti-inflammatory activity of extract of dichloromethane of *S. viscida* (EDSV). The plant was collected in San Luis Potosi State, México, 300 g of dried and powdered *S. viscida* and 3 L of dichloromethane were heated at boiling point for 4 h, after the mixture was filtered and the solvent was evaporated under reduced pressure. Male CD-1 mice used to assess inflammatory activity *in vivo*, and *in vitro* the culture of macrophages. Cell cytotoxicity were evaluated in cancer cell lines (MCF-7 breast cancer, SKL1 and A549 lung cancer, HeLa uterine cancer and SW620 colon cancer). The anti-inflammatory activity of EDSV was determined on TPA-induced edema in mice. EDSV significantly inhibited the edema by 54.8% like that obtained with IND (69.5%). Production of pro-inflammatory cytokines IL-6 and TNF- $\alpha$  decreased after treatment with EDSV. For IL-6 there is a decrease of 33.33% (50  $\mu$ g/mL), while TNF- $\alpha$  decreases 41.80% (50  $\mu$ g/mL). The results of our study show that EDSV have promising anticancer activities *in vitro* in cell line SKL-1 (IC<sub>50</sub> 22.03  $\mu$ g/mL) and it might be an anti-inflammatory agent.

### Biography

Miss Nimsi Campos-Xolalpa is currently working at Department of Biological Systems in Autonomous Metropolitan University Xochimilco unit, Mexico.

## Keynote Talk

### Characterizing Volatility of Essential Oils for Controlling Inhalation Dose

Louise Bennett\*, Minoli Aponso, Antonio F. Patti

*School of Chemistry, Faculty of Science, Monash University, Australia*

#### Abstract

Primary uptake pathways of Essential Oils (EOs) are via the olfactory receptor system (olfaction) and crossing the blood-brain-barrier (BBB), with excellent bioavailability of EOs to the brain demonstrated. However, control of dosing of inhaled EOs is currently poorly managed and therefore inhaled EOs are unoptimized for therapeutic effects. Intake of EOs via inhalation depends on the volatility of compounds in EO extracts. The challenge of achieving controlled dosing of inhaled EOs therefore requires characterization of the volatility and concentration of molecules in the vapour phase, as available for inhaled uptake. The volatility, inhaled dose and absorption pathway of EOs is a consequence of their physicochemical properties. In other words, the collective volatility of EO compounds at a given atmospheric temperature dictates their bioaccessibility. We have reported that the standard partitioning index, Log P, a measure of molecular hydrophobicity, is correlated with absorption of EOs via olfaction and circulation. A method has been proposed to characterize EO vaporization by both passive diffusion at ambient temperature (25°C) and steam-based vaporization (100°C), to estimate the inhaled dose of EOs. The methodology enables estimation of the volatile fraction, and therefore inhalable dose, of any EO extract to be predicted from its Gas Chromatographic profile. The research can inform dose control and optimization of therapeutic effects of EOs.

#### Biography

Prof. Louise Bennett completed undergraduate and post-graduate studies (University of Melbourne) before a PhD (Monash University) and post-doctoral studies (Peter Macallum Cancer Institute). After 20 years at CSIRO in Agriculture and Food business units, in 2017, Louise was appointed Professor of Food Chemistry at Monash University. Louise is a trans-disciplinary scientist working across food science and clinical research and its translation into knowledge and useful products that advance human and animal health. At Monash University, Louise is currently the course Director of the Master of Food Science and Agribusiness, and is Co-director of Monash Food Innovation. Louise has authored >75 publications and is a co-inventor of 1 patent.

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# E-Poster Presentation

## Medicinal Characterization of Novel Mush Japn Room Basidiomycetes-X (Echigoshirayukidake)

Tetsuya Konishi

Niigata University of Pharmacy and applied Life Sciences, Japan

### Abstract

Echigoshirayukidake is a novel mushroom found in the mountainous region of Niigata, Japan. The mushroom was primary reported as a homologous species of Truffle but later, a precise DNA analysis identified the mushroom belongs to Basidiomycota but uniquely does not form fruiting body as other family mushrooms. Later it was registered as a new fungi named Basidiomycetes-X to the database of NPO organization for International Patent Organism Depositing (IPOD) in the Industrial Technology Institute of Japan (PCT/JP2004/006418). This mushroom was characterized by high contents of  $\beta$ -glucans which are the component generally found in other mushrooms and associated with their immune modulating function. Indeed, this mushroom showed a stimulative activity on lymphocytes production. Potent antioxidant activity, especially against hydroxyl radical mediated cellular damages, is also characteristic property of this mushroom. In addition to the immune modulating activity, this mushroom showed a wide spectra of medicinal functions such as anti-obesity, hyperlipidemia, liver damage protection, prevention of non-alcoholic steatohepatitis (NASH), and anti-allergic function. The antioxidant activity guided isolation of active ingredients revealed formyl pyrrole are the major ingredient of this mushroom. These results indicates that this novel mushroom will be an attractive fungal resource having high potential of medicinal and functional food applications, and also as the target of further basic molecular and mechanistic studies.

### Biography

Dr. Tetsuya Konishi completed graduate studies at Tokyo College of Pharmacy in 1966, and obtained Ph.D. degree in Analytical and physical pharmaceutical Sciences. After expanding his carrier at University of California at Berkeley as a postdoctoral fellow and a research fellow at Lawrence Berkeley Laboratory from 1975-1978, he got a Associate Professor position at Niigata University of Pharmacy and Applied Life Sciences and enjoyed membrane bioenergetic studies on halophilic bacteria and radiation biology. Later, as a professor, he directed the studies radical biology and functional food sciences based on the traditional oriental medicines as the model of functional foods. He is now a professor emeritus of the University and a director of Mibyou-Shokuyou (Dietary control of Mibyou for disease prevention) Research Society since 2011.

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## Development of Magnetic Particles-Based Enzyme Immunoassay for the Detection of Kwakhurin in *Pueraria candollei*

Seiichi Sakamoto

Kyushu University, Japan

### Abstract

Kwakhurin (Kwa) is one of the unique isoflavonoids produced from *Pueraria candollei* var. *mirifica* (*P. candollei*) which has traditionally been utilized as folk medicine for rejuvenation in Thailand. Recently, *P. candollei*-derived products have widely spread among Japanese women for cosmetic purposes. Correspondingly, there has been an increase in the number of reports regarding possible health hazards caused by the plant's inherent estrogenic activity; thus, the need for a detailed evaluation of the phytoestrogen content of *P. candollei*-derived products has gained a measure of urgency in the recent year. In our previous study, we focused on Kwa and produced anti-Kwa monoclonal antibody (mAb 11F) to develop indirect competitive enzyme-linked immunosorbent assay (icELISA). Here, even more rapid enzyme immunoassay was developed with a combination of mAb 11F and Kwa-magnetic particles (MPs) conjugates, which increase the surface area of the solid phase, resulting in decrease in the immunoreaction time. This novel MPs-based enzyme immunoassay (MPs-EIA) was used to determine Kwa concentration within ranges from 2.44 to 78.1 ng/mL, in which limit of detection exhibited 1.90

ng/mL. Further validation analyses showed that the proposed MPs-EIA protocol was satisfactorily precise, accurate, and reliable for effective determination of Kwa in *P. candollei* and its related products.

### Biography

Dr. Seiichi Sakamoto received his Ph.D. degree in Pharmacy from Kyushu University in 2011. Then, he joined Nagasaki International University as Research Associate. In 2013, he moved to Kyushu University as Assistant Professor and was promoted to Associate Professor in 2020. His research interest includes allelopathy, phytochemical analysis using immunoassay, antibody engineering, and anti-cancer activity. Dr. Sakamoto has authored over 70 peer-reviewed papers.

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## Effects of Regular Prenatal Yoga Practice on the Angle to Which Pregnant Women Can Spread their Legs

### Hiromi Ito-Kaneko

*Gifu University, Japan*

### Abstract

This study aimed to investigate how the angle to which pregnant women can spread their legs may change with regular yoga practice. Whether prenatal yoga is effective at widening the angle to which pregnant women can spread their legs has yet to be scientifically and quantitatively demonstrated. The authors showed that every time the women in this study attended a yoga class, there was the immediate effect of an increase in the angle to which they could spread their legs. Participants consisted of 59 pregnant women regularly attending a yoga class. Data collected consisted of measurements taken of the angle at which each participant was able to spread her legs before and after every yoga class. Analysis of variance (ANOVA) was performed with Tukey's HSD post-hoc test in SPSS 22.0. The angle at which the participants were able to spread their legs before and after each yoga class were found to have increased after each of the nine classes: 7.62°, 8.44°, 9.52°, 9.78°, 11.12°, 12.70°, 15.07°, 16.21°, and 25.80°, respectively. ANOVA results showed a significant difference between the pre- and post-class measurements ( $F(8, 205) = 5.009, p < .001$ ). Tukey's HSD post-hoc test showed significant differences between the ninth class and before the sixth class ( $p < .001$ ). Practicing yoga widens the angle at which people can spread their legs. Our results suggested that regular practice can result in further improvement. As widening this angle expands the pelvic outlet, which makes giving birth easier, practicing yoga may help pregnant women have an easier birth.

### Biography

Dr. Hiromi Ito-Kaneko is working as an assistant professor of Reproductive Health Nursing/Midwifery Nursing Course at Tokai National Higher Education and Research System, Gifu University, Japan.

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## Bioimprinting Technique for the Quantitative Analysis of Kwakhurin

### Kei Minami

*Kyushu University, Japan*

### Abstract

Immunoassay, which is based on the molecular recognition of antibody, represented by enzyme-linked immunosorbent (ELISA), is one of the most widely used analysis methods. Recently, the efforts to mimic the feature of antibody have been carried out by bioimprinting technique, which enabled formation of specific cavity for a certain analyte on a surface of a biopolymer, like protein through denaturation and refolding in the presence of analyte. This technique can improve the conventional immunoassays in terms of cost, time, and ease of producing antibody-like substance without using animals. Thus, here, we aimed to produce bioimprinted ovalbumin (biOVA) that recognize kwakhurin (Kwa), which is the isoflavonoids specifically contained in *Pueraria candollei* var. *mirifica*, and apply it in ELISA-like procedure to develop a novel quantitative method. The biOVA was produced by a quite simple method: (i) mixture of Kwa and denaturized OVA; (ii) refolding of OVA by glutaraldehyde; (iii) removal of Kwa by dialysis. Several types of ELISA-like



test revealed that biOVA recognized Kwa with relatively high specificity against our target Kwa, and also, cross-reactivities against some of isoflavonoids were observed. In addition, linearity of standard curve was observed within the Kwa concentration range of 10–100 µg/mL. Further stability test suggested that the biOVA was stable for 1 week at 4°C when it is dissolved in PBS containing 5% (v/v) glycerol. Our results showed the possibility that biOVA could be applied to quantitative analysis of Kwa instead of antibody.

### Biography

Mr. Kei Minami received his bachelor of pharmaceutical science of Kyushu University in 2018. Then, after a year of study abroad, he has been learning pharmacognosy as a master's student of graduate school of pharmaceutical science, Kyushu University.

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## Synthesis and Evaluation of Anti-leukemia Activity of Harringtonine Ester Derivatives

### Akihiro Ochi

*Kyushu University, Japan*

### Abstract

Harringtonine (HT), an alkaloid isolated from the plant genus *Cephalotaxus*, is known for the protein synthesis inhibitor against myeloid leukemia cells. The main mechanism of HT is inhibiting protein elongation by binding ribosome directly, which is another mechanism of other medicines for leukemia. In previous study, we synthesized five HT derivatives (HT1-5) including 5'-de-Omethylharringtonine (HT1) and investigated their antiproliferative activity to HL-60 acute promyelocytic leukemia cells. As a result, we revealed that C-5' methyl group of HT affect the antileukemic activity because the antiproliferative activity of HT1 was only 1/2000 or less than that of HT. This result indicated that the esterification of HT1 at the C-4' carboxylic acid group can enhance the anti-leukemia activity of HT derivatives. Here, we synthesized HT ester derivatives of C-5' and evaluated their antiproliferative activity against HL-60 by MTS assay. As a result, we found that n-butyl ester derivative of HT had the strong activity to inhibit proliferation of HL-60 (IC<sub>50</sub> = 42.1 nM), which was stronger than HT (IC<sub>50</sub> = 98.7 nM) and was nearly equal to HHT (IC<sub>50</sub> = 40.7 nM). Furthermore, the results exhibited that the activity of HT ester derivatives is affected by the hydrophobicity and steric hindrance of C-5' hydrocarbon group. These results indicated that HT derivatives are hydrolyzed to form HT1 in leukemia cells and acted as a protein synthesis inhibitor.

### Biography

Mr. Akihiro Ochi received his B.S. degree in Pharmacy from Kyushu University in 2019. Then, he advanced to Graduate School of Pharmaceutical Sciences, Kyushu University. He is expecting to receive M.S in Pharmacy from Kyushu University in 2021. B. Ochi has authored one paper.

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## Preliminary Findings on Mineral Composition of Dried *Moringa oleifera* and Combination of *M. oleifera* with Dried Navel Oranges

### Muzi W. Keswa\*, Babalwa Mpambani and Mongezi M. Mbangcolo

*Döhne Agricultural Development Institute, South Africa*

### Abstract

*Moringa oleifera* is a highly nutritive tree plant and its plant components are used for a variety of commercial purposes. Moringa leaves are rich in minerals, vitamins and other essential phytochemicals. A study was conducted to evaluate the mineral composition of Moringa leaves in comparison to a mixture of dry Moringa leaves and navel oranges. The study was conducted at Döhne Agricultural Development Institute in Amahlathi Local Municipality. The oranges were collected from Ripplemead Citrus Farm in Peddie, Ngqushwa Local Municipality, while Moringa leaves were obtained from the one-year-old trees in Amalinda, Buffalo City Municipality. The leaves and oranges were dried at 55°C for 24 hours in order to determine the composition of the retained elements and nutrients in both oranges and Moringa. The results showed that pure Moringa has a potential of producing high nutrient composition compared to the combination of Moringa and orange. In contrast, the pure orange showed relatively lower levels of the tested mineral components

compared with the mixture of the orange and Moringa, with the exception of potassium. Pure Moringa produced high levels of the retained mineral elements compared to the combination of Moringa and orange and pure orange. However, the levels of minerals obtained in this study were generally lower compared to those reported by other authors. Since this study is preliminary, more conclusive results will be obtained when the trial is repeated.

### Biography

Mr. Muzi Welcome Keswa is a Scientific Technician: Horticulture at Döhne Agricultural Development Institute in the Eastern Cape Department of Rural Development and Agrarian Reform, South Africa. He has presented in many scientific platforms, nationally and recently, he presented in the 2<sup>nd</sup> International Symposium of Moringa. He is the member of South African Society for Agricultural Technologists and a member of South African Society for Agricultural Extension.

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## Prebiotics Enhance the Biotransformation and Bioavailability of Ginsenosides in Rats by Modulating Gut Microbiota

### Shuiming Xiao

*China Academy of Chinese Medical Sciences, China*

### Abstract

**Background:** Gut microbiota mainly function in the biotransformation of primary ginsenosides into bioactive metabolites. Herein, we investigated the effects of three prebiotic fibers by targeting gut microbiota on the metabolism of ginsenoside Rb1 *in vivo*.

**Methods:** Sprague Dawley rats were administered with ginsenoside Rb1 after a two-week prebiotic intervention of fructooligosaccharide, galactooligosaccharide, and fibersol-2, respectively. Pharmacokinetic analysis of ginsenoside Rb1 and its metabolites was performed, whilst the microbial composition and metabolic function of gut microbiota were examined by 16S rRNA gene amplicon and metagenomic shotgun sequencing.

**Results:** The results showed that peak plasma concentration and area under concentration time curve of ginsenoside Rb1 and its intermediate metabolites, ginsenoside Rd, F2, and compound K (CK), in the prebiotic intervention groups were increased at various degrees compared with those in the control group. Gut microbiota dramatically responded to the prebiotic treatment at both taxonomical and functional levels. The abundance of *Prevotella*, which possesses potential function to hydrolyze ginsenoside Rb1 into CK, was significantly elevated in the three prebiotic groups ( $P < 0.05$ ). The gut metagenomic analysis also revealed the functional gene enrichment for terpenoid/polyketide metabolism, glycolysis, gluconeogenesis, propanoate metabolism, etc.

**Conclusion:** These findings imply that prebiotics may selectively promote the proliferation of certain bacterial stains with glycoside hydrolysis capacity, thereby, subsequently improving the biotransformation and bioavailability of primary ginsenosides *in vivo*.

### Biography

Dr. ShuiMing Xiao is associate professor at Institute of Chinese Materia Medica, China Academy of Chinese Medical Sciences. He graduated from Shanghai Jiao Tong University with a microbiology PhD degree in 2013. His main research area is the interaction between traditional Chinese medicine and gut microbiota, which includes the gut microbiome-wide association study (MiWAS) for metabolic indicators of ginsenoside based on the microecological modulator intervention. Dr Xiao is also the chief investigator of the National Science and Technology Major Project (No. 2017ZX09301060-012; 2018ZX09201011), the Youth Program of National Natural Science Foundation of China (No. 81503469).

## Biological Perspective of Balur Therapy: A Network Pharmacology Study

Sherry Aristyani

Research Institute of Free Radicals, Indonesia

### Abstract

Balur is an integrative topical medication from Indonesia using herbal medicines: *Moringa oleifera*, *Nicotiana tabacum*, and *Coffea arabica*. Balur can be applied to treat various diseases including chronic diseases and autism because it performs to scavenge free radicals and release electron of heavy metals. However, the complexity of Balur mechanism as medical therapy needs a comprehensive understanding. Not only from a modern physics perspective but also from a biological perspective to explore the effect of active compounds on the human body. In this study, we proposed the computational study to understand Balur therapy from a biological perspective through the molecular mechanism. Active compounds of 3 herbal medicines Balur were collected from Dr. Duke's Phytochemical and Ethnobotanical Databases. Proteins target related to active compounds were obtained from SwissTargetPrediction and PharmMapper Server. Gene Ontology (GO) was conducted to verify the potential mechanism. Moreover, network analysis was conducted with Cytoscape. We found that the active compounds were contributed to the therapeutic effectiveness through a molecular mechanism. This study demonstrated the multi-compounds and multi-target of Balur's herbal medicines to treat disease.

### Biography

Miss Sherry Aristyani and Saraswati Subagio are the researchers at the Research Institute of Free Radicals, Malang, Indonesia. Their research focuses on Balur's holistic mechanism and the quality of life. Tintrim Rahayu is a botanist from the University of Islam Malang. Her research focuses on herbal active compounds. Sutiman Bambang Sumitro is a Professor at the Biology Department at the University of Brawijaya Indonesia. He is also an advisor at the Research Institute of Free Radicals. His research focuses on science complexity, cell biology, and nanobiology.

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## Effect of Pb Contaminated Soil on Germination and Development of *Sinapis alba* Sps

Anda Gabriela Tenea

National Research and Development Institute for Industrial Ecology, Romania

### Abstract

The mineral component of the soil fixes the lead especially on clay minerals, and the organic component of the soil fixes the lead on humic acids. Consequently, over 80% of the lead from soil is bound, and only a small part remains bioavailable to the plants. This explains why in lead-polluted soils the toxicity on plants is not proportional to the total lead content [1].

The study of *Sinapis alba* (SIA, MicroBiotests Belgium) grown on a rich organic matter soil (12% humus), at two levels of contamination with Pb, confirms at the end of experimental tests that the added Pb content remains in proportion of 96% in soil. The concentrations of 40 mg/kg Pb (Pb I), respectively 80 mg/kg Pb (Pb II) were tested, the last one being a value located above the alert threshold for agricultural soils according to the Romanian legislation.

Excessive concentrations of lead in the soil led to decreased germination process [2], a fact confirmed also by the results of this study. Germination in the Pb I test was 10% lower than in the control test, respectively 30% lower in the case of the Pb II experiment compared to the control test, where 85% of seed were germinated.

Both experiments show that mustard plants do not bioaccumulate lead at this level of concentration, recording values of transfer and bioaccumulation indices lower than 1 or zero.

Thus, lead is mainly found in the root, the plants do not accumulate lead either in the stem or in the leaves. The plants from the contaminated experiments showed more intense pigment, the chlorophyll content for each experiment being higher than the value of the chlorophyll concentration in the control sample.

## Biography

Miss Anda Gabriela Tenea is working at National Research and Development Institute for Industrial Ecology, and Craiova University.

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## Phytochemical Analysis, Chemical Composition and Anti-Bacterial Screening of *Combretum erythrophyllum* Leaves and Stems

### Sahejna Bantho

University of Kwazulu-Natal, South Africa

#### Abstract

Medicinal flora are known to contain secondary metabolites which may effectively improve an individual's state of health. These medicinal properties are attributed to secondary metabolites, which in some instances, are exuded by specialized micro-secretory structures such as trichomes, laticifers or glands. *Combretum* is recognized as the largest genus of Combretaceae and is prevalent in southern Africa due to its extensive use in traditional medicine. Screening plants for their potential medicinal properties is of utmost importance hence this study investigated the histochemistry, phytochemistry, chemical composition and antibacterial properties of the leaves and stems of *Combretum erythrophyllum*. Crude leaf and stem extracts were generated using hexane, chloroform, and methanol as the solvents of choice. Preliminary histochemical and phytochemical tests indicated the presence of multiple phytochemicals, including carbohydrates, alkaloids, sterols, phenols, fixed oils, and fats. Flavonoids were found within the leaf extracts only, while saponins, mucilage, and gums were specifically identified within the stem extracts. The emanating studying has reported the first gas chromatography-mass spectrometry (GC-MS) screening of *C. erythrophyllum* leaf and stem extracts which resulted in the identification of 196 phytochemicals. Major phytochemicals such as sitosterol and lupeol (known for their possible anti-cancer and anti-inflammatory properties), were highlighted. In addition, thin layer chromatography analysis resulted in the visualization of approximately 36 different classes of compounds. The generated methanolic extracts were analyzed for their antibacterial activities against *Escherichia coli*, *Pseudomonas aeruginosa*, *Bacillus subtilis*, *Methicillin Resistant Staphylococcus aureus* and *Staphylococcus aureus*. Within leaf extracts, clear zones of inhibition were seen against the different bacterial strains tested, whereas the stem extracts failed to depict a zone of inhibition for *E. coli*. Given these antibacterial properties of the extracts of *C. erythrophyllum*, this species should be considered for its medicinal importance. The isolation and extraction of these beneficial compounds opens further avenues into their use in the pharmaceutical industry.

## Biography

Miss Sahejna Bantho is a member of the International Golden Key Society and has obtained Summa Cum Laude for her master's dissertation in medicinal plant research. Miss Bantho is currently a 2<sup>nd</sup> year PhD-candidate at the University of KwaZulu-Natal. She is highly knowledgeable in the field of cellular biology while specializing in microscopy, phytochemistry and biological analysis of medicinal plants. Her research project aims to evaluate the micromorphological nature of a native medicinal plant specie's while analyzing the relative chemical composition and biological activity. In conclusion, this research hopes to aid the pharmaceutical industry in the hope of developing novel drugs and systems.

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## Isolation, Identification and Evaluation of Bioactive Secondary Metabolites of the Fungal Endophytes of *Grewia lasiocarpa* E. mey. ex Harv with Antibacterial Properties

### Nneka Augustina Akwu

University of KwaZulu-Natal, South Africa

#### Abstract

*Grewia lasiocarpa* E. Mey. ex Harv. (Malvaceae) is an indigenous Southern African plant, that belongs to a genus with known medicinal properties. Three media were used to culture the endophytic fungi present in the leaves and stem bark of *G. lasiocarpa* viz., Potato

Dextrose Agar (PDA), Malt Extract Agar (MEA) and Bacteriological Agar (BA). The media were used singly and also supplemented with three dilutions of the leaves and stem bark aqueous extracts (plant-based media) of *G. lasiocarpa* to cultivate the endophytic fungi. Bio-directed isolation of endophytes with antibacterial properties was carried out using the agar-well diffusion assay of the crude ethyl acetate extract of the endophytic fungi. Five out of the twenty-two screened extracts of the endophytes showed significant inhibitory activity against MRSA at concentrations within the range of 1 mg/mL - 62.5 µg/mL. These endophytic fungi were identified as *Aspergillus fumigatus* (MK243397.1), *Aspergillus fumigatus* (MK243451.1), *Penicillium raistrickii* (MK243492.1), *Penicillium spinulosum* (MK243479.1), *Meyerozyma guilliermondii* (MK243634.1) from the partial sequence of 18S rDNA gene. This is the first study describing the morphology and biological evaluation of the endophytic fungi present in the leaves and stem bark of *G. lasiocarpa* E. Mey. ex Harv.

## Biography

Dr. Nneka Akwu is a postdoctoral researcher at the University of KwaZulu-Natal, Durban, South Africa. She is an alumna of the Organisation for Women in Sciences (OWSD). Her area of research focuses on morphology, phytochemistry, pharmacognosy and micropropagation of medicinal plants.

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## **Moringa oleifera Leaf Extract Extends Lifespan and Modifies HAART Drug-induced Locomotor, Reproductive and Antioxidant Deficits in *Drosophila melanogaster***

**Walter Mdekerá Iorjiiim**

University of Jos, Nigeria

### Abstract

**Background:** HAART-related toxicities remain a public health challenge without an ameliorative pharmacological intervention.

**Aim:** To evaluate the longevity and ameliorative activities of *Moringa oleifera* leaf (MOL) extract against some HAART drug-induced toxicities in *Drosophila melanogaster*.

**Materials and Methods:** *D. melanogaster* (1-3 day) were first exposed for life to different concentrations of MOL (50 – 500 mg) or 25 mM Ascorbic acid or 1000 µL distilled water to determine longevity. Secondly, flies were fed on 46.56 mg of HAART drugs (Efavirenz-based or Dolutegravir-based) alone or supplemented with MOL 250 mg or 500 mg per 10 g fly food in five replicates for seven days. Afterward, longevity, fecundity, and negative geotaxis were evaluated. Also, activities of Superoxide dismutase, Catalase, as well as Malondialdehyde content, were investigated using whole fly homogenate. Statistical significance was taken at  $P < 0.05$  or ( $P < 0.006$ ) (Bonferroni adjusted P-value for multiple curve comparisons).

**Results:** The MOL extract significantly ( $P < 0.001$ ) increased fly longevity compared with the control groups. Similarly, supplementation with 500 mg MOL extracts significantly ( $P < 0.05$ ) ameliorate HAART drug-induced deficits in climbing ability, fecundity, SOD, and CAT activities as well as MDA content compared with groups exposed to HAART drugs alone respectively.

**Conclusion:** Our results suggest that *M. oleifera* leaf extract extends lifespan and ameliorate HAART drug-induced toxicities via its antioxidant activities, supported by improved locomotor and reproductive decline, and restoration of the deficits in the biomarkers of oxidative stress (SOD, CAT, and MDA) in *D. melanogaster*.

## Biography

Mr. Walter Mdekerá Iorjiiim has devoted his life to pharmaceutical practice. As an academic and community pharmacist, he knows how antiretroviral therapies affect life. He has experience in pharmaceutical care for HIV/AIDS patients and continues to educate himself through research on possible therapies that might mitigate antiretroviral drug-induced toxicities. He studied at the University of Jos, Nigeria, with a Bachelor of Pharmacy (B.Pharm), Master of Science (M.Sc Pharmacology), and an ongoing Doctorate Degree (Pharmacology and Toxicology). He is a lead or co-author of publications on antiretroviral toxicities and medicinal plants. Walter lives in Nigeria, with his wife and four children.

### Safety and Efficacy of Homeopathically Prepared *Gymnema sylvestre* Q, 30 & 200 Dilution on Streptozotocin Induced Diabetic Rats

Avanish Shukla

University of Cyberjaya, Malaysia

#### Abstract

The present study was performed in various phases to elucidate the safety and anti-diabetic activity of homeopathic preparation of *Gymnema sylvestre* (HPGS) on streptozotocin induced diabetic rats. Qualitative phytochemical and macronutrient screening confirmed the presence of alkaloids, carbohydrates, proteins, saponins and flavonoids in HPGS Q. With the aid of liquid chromatography–mass spectrometry (LCMS), thirty six compounds were identified in HPGS Q including 5,3',4'-trihydroxy-7-methoxy-4-phenylcoumarin 5-O-(6''-acetyl)-galactoside, phytosphingosine and anacardic acid which are proven to be anti-diabetic potential from previous studies. Further analysis was carried out using OECD 423 guideline to investigate the acute oral toxicity effect of HPGS Q *in vivo* using Sprague Dawley healthy rats. A single oral administration at a dose of 300 mg/kg body weight showed a score of zero (0) with no evidence of clinical or toxic manifestation. No significant body weight variations, differences in the mean percentage of organ to rats' body weight, and mortality were observed in 14 days confirming the safety profile of HPGS. To further investigate the anti-hyperglycemic effect, 4.7 mL/kg of HPGS Q was administered to streptozotocin-induced diabetic rats. After 14 days of treatment, diabetic rats treated with HPGS Q showed an elevated body weight and reduced blood glucose levels (<7.5 mmol/L). Long term dose-dependent blood glucose lowering effect studied with different potencies (HPGS Q, 30C and 200C) in diabetic rats over 91 days (13 weeks) demonstrated that HPGS had a hypoglycemic effect. In conclusion, HPGS Q is safe to be consumed up to 300 mg/kg body weight and demonstrated an improved blood glucose profile in diabetic rats.

#### Biography

Dr Avanish Shukla graduated his Homeopathic degree (BHMS) from Bharati Vidya Peeth Deemed University, Pune, India and is currently the Director of Global Homeopathic Centre, Malaysia and also PhD student (by research) at Cyberjaya University and program coordinator for bachelor of Homeopathic program at Lincoln University College, Malaysia. To further develop his expertise in the field, Dr. Avanish obtains his professional recognitions as a registered medical practitioner under the Central Council of Homeopathy New Delhi, India and qualified homeopathic practitioner under Ministry of Health – T&CM, Malaysia.

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### Integrative Medicine through Islamic Perspective in Respecting Pandemic Covid-19

Meity Elvina

University of North Sumatera, Indonesia

#### Abstract

One of the problems in the world today is the outbreak of the coronavirus pandemic case. The case of this pandemic outbreak also cannot be separated from the problems known to Muslims. Overall, Al Quran and al Hadith explain about many stories that we might be able to take the event of Ibrahim. Islam is a perfect religion has provided many solutions to various kinds of problems that arise by Muslim people, including the coronavirus pandemic, which is of considerable concern to humans worldwide. Muslim needs to have his own perspective in responding to this coronavirus outbreak's pandemic incident. So that we can do our best to overcome the pandemic case of the coronavirus outbreak by "making peace" with microorganisms, which are also God's creatures, we can contemplate answering questions related to this, for example, why is this outbreak the case of the current pandemic? The perfect guide to life, namely the book of Allah Al Quran, already has the answer.

## Biography

Dr. Meity Elvina is an Obstetrician Gynecologist Medical Doctor. She is PhD Candidate for Reproductive Molecular Biology concentration Integrative Medicine and Herbal Medicine, Department of Biology Faculty of Mathematics and Natural Sciences University of North Sumatera, Indonesia. She is a Board of Expert of International Islamic Medicine Forum, Indonesia.

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## Determinants of Patients Preferring Complementary and Alternative Medicine Attending Public Hospitals in Lahore, Pakistan

### Abdullah Hussain

*University of Health Sciences, Pakistan*

### Abstract

**Objective:** To find the frequency and determinants of patients preferring complementary and alternative medicine over registered medical doctors.

**Methods:** This cross-sectional study was conducted at three tertiary care hospital, i.e.; Services Hospital, Mayo Hospital and Jinnah Hospital in Lahore, Pakistan, from June 8 to August 20, 2017. A pre-tested self-administered questionnaire was used to collect data. SPSS 20 was used for data analysis.

**Results:** Of the 385 subjects, 200(51.9%) had visited at least one complementary and alternative medicine healer in their life. Besides, 166(83%) subjects confirmed positive outcome of such therapies. When asked about reasons behind their choice, 227(59%) subjects mentioned cost effectiveness, 99(25.7%) better understanding, 131(34%) guidance about disease by such healers, 198(51.4%) harmless therapies, 198(51.4%) natural ingredients of medicines, 154(40%) accessibility, 161(41.8%) psychological satisfaction, 221(57.4%) said fewer appointments, 222(57.7%) said diagnosis without laboratory tests, 131(34%) family influence, 52(13.5%) had surgical fears, 101(26.2%) said faith in spiritual exercises, 63(16.4%) were addicted to complementary and alternative medicine products, 122(31.7%) said better communication) while 183(47.5%) said sparing more time for consultation.

**Conclusions:** There were a variety of beliefs and reasons behind patients preferring complementary and alternative medicine providers over medical doctors.

## Biography

Dr. Abdullah Hussain has graduated in Medicine (MBBS) in the year 2017. Since then he have worked in many advance care major hospitals in Lahore, a metropolitan of Pakistan. These tertiary care hospitals include Services Hospital Lahore and Mayo Hospital Lahore. During his practice as a physician he have noticed many people from his country believe in complementary and alternative medicine. It fascinated him and he started studying about alternative medicine. He conducted a study in which he asked people why they believe alternative medicine is still more reliable than allopathy medicine. And, results of study amazed him, which he want to present with us.

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## Plants Used in Complementary Medicine in the Treatment of Respiratory Tract Diseases in Turkey

### Dilge Yücel

*Eskisehir Osmangazi University Faculty of Medicine, Turkey*

### Abstract

In this study, the plants used in complementary medicine for the treatment of respiratory tract diseases in Turkey have been researched. The study was carried out in two stages: literature study and fieldwork. As a result of the study, it was determined that 71 plant species have been used as complementary medicine in the treatment of respiratory tract diseases.

The genera which have the most species are *Salvia* sp., *Thymus* sp., *Origanum* sp. The most commonly used plant species; *Salvia* sp., *Thymus* sp., *Mentha* sp., *Lavandula* sp. Bioactive compounds found in many of these plants; carvacrol, alkaloids, saponins, steroids, tannins, glycosides, anthocyanins, terpenes and other secondary metabolites.

According to the results it has been determined that these plants are used effectively within the scope of complementary medicine against asthma, bronchitis, chronic cough, influenza, flu, sinusitis, pharyngitis, shortness of breath and tuberculosis. Some species have been observed to significantly reduce and prevent respiratory tract infections. Respiratory tract infections are generally grouped under two main headings: upper (Pharyngitis, Laryngitis, Flu, Sinusitis) and lower (Asthma, Bronchitis, COPD, Tuberculosis, Pneumonia) respiratory tract infections. However, most of these plants are used in the treatment of all respiratory tract infections without distinguishing the type of infection among the public.

As result; it was determined that 71 plant species researched in this study have the potential to be used in the treatment of respiratory tract diseases. With further studies, there are possibilities to develop phytochemicals for use in the treatment of respiratory tract diseases from these plants.

### Biography

Miss Dilge Yücel has been studying Medicine at Eskişehir Osmangazi University. She has five published articles on medicinal plants called: "Plants used in complementary and alternative medicine applications in the treatment of cardiovascular diseases in Turkey", "Importance of *Rosa canina*'s in terms of public health and Turkey forestry", "Cytotoxic effects of *Satureja cuneifolia* extract in liver cancer cell line (HepG2)", "Development of health-harmless plant dyes for the coloring of paper", "Investigation of Medicinal Plant Production and Trade Potential in Turkey". She is compositor of peer-reviewed journal called Biological Diversity and Conservation.

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## Ethnobotanical Survey of Plants Used by Traditional Health Practitioners for Treatment of Schizophrenia Spectrum Disorders in Bandiagara, Mali, West Africa

**Pakuy Pierre MOUNKORO**

*University of Sciences, Techniques and Technologies of Bamako, Mali*

### Abstract

The spectrum of schizophrenia and other psychotic disorders are the most serious mental illnesses in the world. The main objective of this study was to document the knowledge of herbal medicines for use in the management of schizophrenia-like syndromes in the Bandiagara District. This exploratory study used qualitative research methods to investigate the views of traditional practitioners on schizophrenia-like syndromes and plants used for healing in the Bandiagara District. A total of 20 traditional health practitioners were interviewed. The local schizophrenic-type syndromes and their causes share the same name: spirit attack, bad luck, witchcraft and insanity (supernatural causes). The traditional treatment included 42 plant species belonging to 20 plant families, among which legumes were the most represented family, followed by Combretaceae, Apocynaceae and Moraceae. *Securidaca longipedunculata* Fresen. (Polygalaceae) was the most used, followed by *Khaya senegalensis* (Desv.). It should be noted that the most commonly used plants were already or almost extinct in Dogon Country. The objective of our study presented here is to gather information on the local understanding of schizophrenia spectrum disorders, and the treatments provided by traditional health practitioners in Dogonland.

### Biography

Dr. Pakuy Pierre MOUNKORO is an Assistant Professor of Medicine and dentary Faculty of the University of Sciences at Techniques and Technologies of Bamako, Mali, West Africa. He is Hospital practitioner and Chief of the psychiatry department of the University hospital center Point G Bamako. He is Researcher in Mental Health and Pharmacopoeia and Traditional Medicine. He is Former head of the Regional Center for Traditional Medicine Research of Bandiagara, Mali.



## Integrative Medicine in the Context of Climate Change

Andrés J. Ursa Herguedas

*Cl nica Naturista e Instituto de Medicina Integrativa, Spain*

### Abstract

Integrative medicine, with the use of conventional and non-conventional medicine, has been implemented for decades in various health systems and is seen as the only solution for economically and environmentally sustainable health within the context of climate change. The World Health Organization has been recommending its inclusion in public medicine for decades and urged research on its safety and efficacy. Traditional medicines such as China or Ayurveda; Knowledge about medicinal plants and ethnobotany and other resources used by Humanity for millennia, may be contributing to reduce health spending, improve the health of the population and reduce the environmental impact of health systems. Other techniques widely used in many countries for their safety and efficacy such as homeopathic medicine and variants, neural therapy or ozone therapy, compete with pharmacotherapy, established as the current paradigm of medicine, hindering the advancement of traditional and alternative medicine, qualifying it in general, as of low scientific efficiency, when drugs have become the third cause of death in some developed countries. It is urgent to reconsider the current paradigm of medicine since the current one is iatrogenic and health systems are not sustainable either economically or environmentally.

### Biography

Dr. Andr s J. Ursa Herguedas is graduated in medicine and surgery from the University of Valladolid. Received his Doctor of Medicine and Surgery from the Complutense University of Madrid, with a “cum laude” qualification. He is now Director of the Nativist Clinic and Institute of Integrative Medicine in Valladolid. Teaching official of the Junta de Castilla y Le n (health area). Member of the Illustrious Academy of Health Sciences Ram n y Cajal (Madrid). He is Author of more than 35 scientific articles in national and international journals. He is Author of two books: From Hippocratic Medicine to Integrative Medicine (Spanish Academic Editorial) and Meditation, Well-being and Health (University of Valladolid). Author of several book chapters at IntechOpen (London). National and foreign speaker in more than 40 interventions. He also received Dr. G mez Ulla Award for Health Excellence (Madrid, 2019).

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## Ethnobotanical Knowledge of the Most Commonly Used Plants in the Management of Gastrointestinal Ailments in Yobe State, Nigeria

Muhammad Salihu Abdallah

*Yobe State University, Nigeria*

### Abstract

Many plants in Nigeria have potentialities in curing many diseases. Rural and urban people made use of medicinal plants as their curative measures, their ancient belief propounded the authenticity on treating ailments <sup>1</sup>. The major family among the surveyed plants, were Fabaceae (dominant), followed by Anacardiaceae and Combretaceae. Moreover, out of 97 respondents, 81 were male (83.5%) and 16 were female (16.5%) across the 3 senatorial district <sup>2</sup>. It has also been recorded that 41-50 years were many into practice with their P-value 0.13. The majority of the respondents, were illiterates (P-value 0.06). However, Diarrheal fidelity levels ranged from 18.5% -100%, dysentery fidelity levels ranged from 11.11- 45%, pile also ranged from 11.11 – 50% and lastly, ulcer covered 9.1% -100%. The ailments were in the range of 0.69 – 0.75 factors of informant consensus. Moreover, plants species with 0.34, 0.27 and 0.21 as well as those with 0.1, were regarded to have the highest RFC values, regardless of those having lowest values <sup>2</sup>. Information gathered were mainly on the cases of gastrointestinal ailments and it was first of its kind as far on the gastrointestinal ailments in Yobe State, Nigeria.

### Biography

Mr. Muhammad Salihu Abdallah worked at Desert Research Monitoring & Control Centre, recently moved to Department of Microbiology as Research fellow/ Lecturer II (2013-Date), Yobe State University Damaturu, Yobe State, Nigeria. He is PhD student at University Putra Malaysia in the Field of Medicinal plants and Microbes.

## Acupuncture in the Improvement of Gingivitis in Women with Diabetes

Lis Cardoso Marinho Medeiros<sup>1\*</sup>, Kellyane Folha Gois Moreira<sup>1</sup>, Teresinha de Jesus Aguiar dos Santos Andrade<sup>2</sup>

<sup>1</sup>NUEPES-UNASUS - Universidade Federal do Piauí, Brazil

<sup>2</sup>NIAC-Instituto Federal do Maranhão – IFMA, Brazil

### Abstract

Patients with Diabetes mellitus present with mouth alterations, such as gingivitis, periodontitis, xerostomia, oral burning syndrome, taste disturbances and caries, compromising their quality of life. In order to care for this target audience, conventional treatments, with the systematic follow-up of a dental surgeon, and the use of Integrative and Complementary Practices, widely used in Basic Health Care, such as traditional Chinese medicine/ acupuncture, which has already presented scientific evidence of its applicability. To analyze the efficacy of acupuncture as an Integrative and Complementary Practice aiming to improve gingivitis associated with diabetes. This was a randomized clinical trial, whose participants were diabetic women attended by the Primary Care of the city of Bom Jesus (PI) city, who were randomly divided into two groups: the control group received oral hygiene instructions and performed the treatment conventional treatment that consisting of tartar scraping and prophylaxis; in the experimental group, in addition to instructions on oral hygiene, tartar scraping and prophylaxis, participants were referred to ten sessions of auricular acupuncture. In the control group, the average ISG ranged from 26,3% to 24,3%, a variation that did not show statistical difference ( $p\text{-value} = 0,237 > 0,05$ ). In relation to the acupuncture group, the average decreased from 43,3% to 23,6%, a significant reduction ( $p\text{-value} < 0,001 < 0,05$ ). For the size of the sample used in the research, the method indicated positive results in reducing the Gingival Bleeding Index, revealing an improvement in the gingival health of the participants.

### Biography

Dr. Lis Cardoso Marinho Medeiros is graduated in Nursing from the Federal University of Piauí (1984), graduated in Dentistry from the Federal University of Piauí (1991), master's degree in Natural and Synthetic Bioactive Products from the Federal University of Paraíba (1991) and doctorate in Nursing from the Federal University of Rio de Janeiro (2001). She is currently Full Professor of Biophysics at the Federal University of Piauí. She has experience in training human resources for SUS, with distance learning and herbal medicine. She is currently in the adjunct coordination of the Professional Master's in Women's Health and coordinates the Specialization in Family and Community Health. She is part of the Evipnet Network with the project she coordinates: Strategies to reduce Maternal Mortality in the state of Piauí and serves as Executive Coordinator of UNA-SUS-UFPI.

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## Anticancer Natural Extracts and their Interaction with Standard Chemotherapies; Mechanism of Action and Scientific Validation

### Siyaram Pandey

University of Windsor, Canada

### Abstract

A great advancement has been achieved in our understanding of cancer development, detection, and surgical removal of early and primary cancers in the past few decades. However, treatment of malignant cancers is still a challenge, and most of the chemotherapies developed in past years were centred on targeting general non-selective targets such as DNA replication/repair and tubulins. Obviously these treatment cause severe side effects and most patients succumb to the disease with miserable quality of life. Malignant cancer cells harbor multitude of mutations, chromosomal abnormalities and are resistant to most of the treatments. While maintaining rapid growth these cells do use different energy metabolism and face higher oxidative stress. Potentially all malignant cells could be differentially targeted for cell death by targeting these vulnerabilities. Indeed, we have demonstrated that natural compound pancratistatin selectively targets cancer cell mitochondria to induce apoptosis without affecting non-cancerous cells while compounds like piperlongumine and synthetic analogues of curcumins selectively kill cancer cells by inducing oxidative stress. Interestingly, some of the natural extracts including dandelion root, long pepper and lemon grass also trigger cancer cell death by inducing oxidative stress and mitochondrial depolarization selectively in cancer cells. The dandelion root extract has progressed to phase I/II clinical

trial for cancer in Canada. Gene expression profiling studies indicates that cancer cells and non-cancer cells respond very differently after treatment with these extracts or compounds. These findings open a new window of opportunity to develop new therapeutic regimens that are extremely selective to cancer cells and thus should be free of side effects. Furthermore, since these extracts are safe and can be taken orally, the total extract (which is adjuvant of many compounds in itself) could be taken as supplements along with standard cancer treatments. One major hurdle is their potential interaction with standard chemotherapies and radiation therapy. Many oncologists strongly oppose taking any natural extracts as they think it could hamper the treatment of cancer patients. Therefore, it is critical to investigate drug- natural extracts interaction. Our hypothesis is that natural extracts would sensitize cancer cells to standard treatment as well as reduce toxicity related to these treatments for healthy tissue. We have demonstrated that Dandelion and Lemongrass extracts display positive interaction with different chemo regimens in colon and prostate cancer cell *in vitro* and *in vivo*. Furthermore, we have discovered that these extracts inhibit appearance of colon tumor in transgenic APC<sup>min</sup> mice indicating their preventative ability.

## Biography

Dr. Siyaram Pandey is a Professor of Biochemistry at the University of Windsor. He obtained his B. Sc. Hons (Chemistry) and M. Sc. In Biochemistry from Banaras Hindu University, India, PhD from JNU (Delhi) and CCMB Hyderabad, India, did postdoctoral training at McGill university, worked at NRC as associate and Research Officer before joining the University of Windsor in 2000. Dr. Pandey's research is focused on apoptosis (cell suicide), which is central to various aspects of human health including neurodegenerative diseases and cancer. He has published more than 88 research articles and has 5 patents (two awarded and three filed). He was the President of the Natural Health Product Research Society of Canada from 2013-2015, was the Founder Director and CSO of the Windsor Botanical Therapeutics Inc. Toronto (2015-2017). His group is known for their discovery of the novel natural anti-cancer compound Pancreatistatin, and Dandelion Root extract which is in phase i/ii clinical trial for cancer patients. His group in collaboration with Dr. Arnason's lab at the University of Ottawa has pioneered discovery of different novel natural extracts with very selective anti-cancer activities. Currently he is leading the development of natural extract for cancer treatment collaborating with Synthite Industries Ltd. Cochin, India and oncologists at the Cochin Cancer Research Center in India. He is member of Society of Toxicology, USA, academic editor for PLoS ONE, member of editorial board of Evidence Based Complementary and Alternative Medicine (ECAM), J. Alzheimer's Disease, Integrative Cancer Therapies. His recent work on targeting cancer cells' metabolic and oxidative vulnerability has opened up a new platform for anti-cancer drug development (Ma et al 2017 and Pignanelli et al 2017 Nature Scientific Reports 2017). He has given a TEDx talk that was viewed by more than 125,000 times, has given three public lectures and several invited talk. His publications have received very good readership (more than 8800) and citations (H index more than 44 as per Google Scholar).

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## Understanding Horticulture Therapy and its Impact

Jonathan Trauth<sup>1</sup>, Karleah Harris<sup>2</sup>

<sup>1</sup>Central State University, USA

<sup>2</sup>University of Arkansas at Pine Bluff, USA

### Abstract

There are many social problems facing human civilization today. They vary in geographies, levels of crisis, numbers of people involved, and nature of crisis. Horticulture or community gardening are being used in various populations in a myriad of ways. One example is the effort to help refugees in Cincinnati, Ohio become self-sufficient while caring for psychological challenges associated with post-civil war stress from their native land (Anno, 2012). Others are using horticulture therapy in halfway houses and schools around Cincinnati Ohio. Future projects can embrace the principles of permaculture in horticulture therapy in order to provide a means for an integrated horticulture program that has therapeutic qualities. This can allow the potentiality for large groups of people and communities to become self-reliant, cohesively adjusted, and embrace as a group as the healing processes begin. This idea of refugees gaining autonomy from government assistance and the possibility of personal reconciliation is far more reaching than just internal celebrations within the group; it has political and societal implications that include fiscal responsibility and natural cultural acculturation within the larger society. Benefits of using Horticulture therapy methods at behaviorally challenged schools have been well documented and the initiatives continue to grow.

## Biography

Dr. Jonathan Trauth is an Assistant Professor in the Department of Social Work at Central State University. Dr. Trauth studied Psychology and Theology at Xavier University, completed his MSW at the University of Kentucky and finished his Ph.D. in Counseling at the University of Cincinnati while working at Lighthouse Youth Services. Dr. Trauth has taught both undergraduate and graduate students. His research interests include refugee resettlement, addiction studies, horticulture therapy and family therapy.

Dr. Karleah Harris is an Assistant Professor at the University of Arkansas at Pine Bluff, she has a Ph.D. in Educational Psychology and a Master's degree in Curriculum and Instruction from Purdue University and a Bachelor's degree in Agricultural Education from North Carolina Agricultural and Technical State University. Dr. Harris has taught several undergraduate and graduate students. Her research interests include using inquiry-based science learning to study kindergarten students' explanations, the types of discourse strategies teachers' use during classroom science discourse, children with learning disabilities, horticulture therapy and grandparenting.

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## Ayurveda: Ancient Wisdom, Future Medicine

### Michael Eatmon

*Rollins College, USA*

#### Abstract

Westerners seeking unconventional solutions to chronic healthcare problems often look to the East. Many explore traditional systems of medicine (TSMs) originating in China or India. A growing number look to TSMs as complements, or alternatives, to Western medicine.

Ayurveda is one of India's most vibrant and venerable TSMs. Its history stretches back millennia, into the mists of Vedic antiquity. Though ancient, many view it as viable modern medicine. Generations of Indians have depended on its practitioners for advice, diagnosis, and treatment. Millions turn to Ayurveda, but what are they turning to? Are they relying on a bona fide medical science or on a patent medical pseudoscience? The answer to that question must take four key prior questions into consideration. One, what criteria distinguish a genuine science from a pseudoscience? Two, how compatible with genuine science are Ayurveda's history and philosophy? Three, how compatible with genuine science are Ayurveda's methods, results, and research? Four, do significant, even determinative, differences exist among ancient, traditional, and modern "Ayurvedas"? Once these questions are answered, Ayurveda's scientific status will become clear. Answers to these four key questions will caution the critic. Answers will show that Ayurveda's modern expression ought not to be dismissed. It is neither outdated nor irrational. Evidence will support the claim that Ayurveda is maturing in, and in part because of, the modern age. The modern expression of Ayurveda is a genuine science with a promising future.

## Biography

Dr. Michael Eatmon is an education consultant for college-preparatory secondary schools. His professional work focuses on curriculum design and development and teacher training. His educational background is in ancient and modern foreign languages. His graduate work is in theology and the liberal arts. He comes to the topic of Ayurveda as an amateur philosopher of science. Of special interest is science's demarcation problem. Applied to Ayurveda, it asks whether the TSM is science, pseudoscience, or nonscience. Michael comes to Ayurveda also as a curious explorer of complementary medicine.

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## Prospective Empirical Test Suite for Energy Practitioners

### Melinda H. Connor

*Earth Songs Holistic Consulting, USA*

#### Abstract

**Purpose:** To create a set of measures which can be used to accurately determine Energy Practitioner Competence.

**Design:** 213 subjects in a sample of convenience were tested on 9 machines, for a total of 13 parameters.

**Devices included:** Triaxial Extra Low Frequency Magnetic Field meter, Data Logging Multimeter, RF Field Spectrum Analyzer, Acoustimeter, Broadcast Frequency counter, digital pH meter, digital TDS meter, GDV and physiology suite including heart rate, temperature, galvanic skin response, respiration, EMG, EKG and blood volume pulse.

**Results:** Across the 13 measures, practitioner success ranged from 56.8% on the Acoustimeter to 100% on the Broadcast Frequency Counter measures with 95% CI. Tri Axial ELF magnetic field meter showed significance with practitioners producing oscillations of amplitude from the L hand at  $p < 0.01$  with and effect size D of 1.5 and R hand  $p < 0.001$  and an effect size D of 1.6. Practitioners demonstrated the ability to produce a change in pH beyond  $\pm .1\text{pH}$  in 10 minutes at a Mean of 0.5 and a SD of 0.4 at a 95% CI of 0.48-0.58 and changes in TDS beyond  $\pm 2\%$  at a Mean of 36.7 and a SD of 35.2 at a 95% CI of 31.9-41.5.

**Conclusion:** Test shows a possible way to improve the energy practitioner selection in studies.

## Biography

Dr. Melinda H. Connor has trained as a clinical psychologist, neuropsychologist, drama therapist, massage therapist and in over twenty different styles of energy healing. Dr. Connor received her training as a NIH post-doctoral fellow in IM research at the University of Arizona under Dr. Andrew Weil and Dr. Iris Bell. She is the former director of the Optimal Healing Research Program at the Laboratory for Advances in Consciousness and Health at the University of Arizona, directed by Dr. Gary E. Schwartz. Dr. Connor is founder of Earth Songs Holistic Consulting and the author of 10 books.

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## Photobiomodulation and the Impact on Metabolism and Blood

### Caitlin Connor

*Rewely House University of Oxford, UK*

### Abstract

**Purpose:** To determine if there are metabolic and physiological changes produced by the LifeWave X39 non-transdermal patch, as well as in tripeptides GHK and GHK-Cu production.

**Method:** Patches were worn 8-12 hours each day placed at either the GV14 or CV6 acupuncture points. All measures were taken at Baseline/day 1, day 2 and day 7. Participants were asked to apply patch one hour prior to testing on day 2 and 7. Cortisol levels, Dehydroepiandrosterone sulfate (DHEAS) levels and urine samples were all obtained. WAIS III data was taken immediately, at 10 minutes and at 20 minutes. Blood was drawn to check for changes in GHK and GHK-Cu.

**Results:** A significant increase in GHK in blood was seen at 24 hours,  $p < 0.0098$ . GHK-Cu also showed a significant increase at 7 days,  $p < 0.0137$ . Significant changes were seen in most essential and nonessential amino acids over the period of one week. These changes include:

- Changes of inflammatory markers and their metabolites
- Improvement in sleep quality
- Reduction in blood pressure
- Improvement in short term memory
- Improvement in reported feelings of vitality

**Conclusion:** The results suggest that photobiomodulation may be developed as a significant intervention for otherwise fragile elderly individuals. Improved amino acids, GHK, GHK-Cu, and short term memory which are particularly relevant to an ageing population should be explored.

## Biography

Dr. Caitlin Connor, DAOM holds a Bachelor's degree from Mount Holyoke College with a dual focus in political science and anthropology, a Master's degree in acupuncture and oriental medicine from Arizona School of Acupuncture and Oriental Medicine and a doctorate in Acupuncture and Oriental Medicine from California Institute for Integral Studies/American College of Traditional Chinese Medicine. Dr. Connor has won multiple awards for her research. She is currently doing additional health care sciences research training at the University of Oxford, UK and commuting between countries.

# Day - 3

## Keynote Talk

### Amaranthaceae Plants of Israel and Palestine: Unexplored Heaven

**Abdullatif Azab**

*Eastern Plants Company, Israel*

#### Abstract

Amaranthaceae plant family is one of the largest and most diverse in the plant kingdom. While some of the plants of this family have important nutritional value, others are considered toxic and/or hazardous weeds that many efforts were investigated in controlling them. But both categories were used by humans for traditional medicinal purposes, and some of them were extensively studied by modern science. We will present some ethnomedicinal uses of the plants of this family, along with literature survey of medicinal, biological and other activities. Presented information will focus mainly (but not only) on studies of active compounds and their medicinal applications. A very important part of the presentation will focus on “what we don’t know”, and consequently, the great potential future medicinal research of this family.

#### Biography

Dr. Abdullatif Azab completed his PhD in Medicinal Chemistry, School of Pharmacy, Hebrew University, Israel, in 2012. He completed Post-Doctoral Research, MRI Department from School of Medicine, Hebrew University, Israel, in 2013. He received Neuroscience Excellence Award, in 2013. He was Chemistry High School Teacher, from 1980-2020. Director of Environmental Services Company from 1993-1999. He is Medicinal Plants Researcher, from 2015-Current.

## Session-3

\* Medicinal Plants: Cultivation, Conservation and Phytochemical Studies \* Crude Drugs and Plant Products

### Study of Anti-Obesogenic Potential of Thai Medicinal Plants Using *In Vitro* Methods

**Wijitrapha Ruangaram**

*Hokkaido University, Japan*

#### Abstract

Obesity is one of the worldwide concerned health problems. It is associated with an excess lipid accumulation within the body which consequently lead to more severe disorders. To solve this problem, anti-obesity drugs are developed, however, there are some undesirable side effects regarding the long-term usage. The use of medicinal plants, which is a simple folkway to treat diseases, is a promising method as an alternative to treat obesity.

The purpose of this study is to select favorable medicinal plant candidates with anti-obesity effect. Seventy Thai medicinal plants were screened for an anti-obesogenic potential using three *in vitro* bio-assays including pancreatic lipase inhibitory test (PL), adipocyte lipid accumulation reduction test (LA), and adipocyte lipolysis enhancement test (LE).

From the screening, *Tiliacora triandra* Diels (root), *Cyperus rotundus* L. (rhizome), and *Acacia concinna* (Wild.) DC. (pod) were selected as candidates for further analysis. The plants were studied for the enhancement of lipolysis in detail whether protein kinase A (PKA) or extracellular signal-regulated kinase (ERK) pathways, the two key pathways related to lipolysis enhancement, are concerned in the activity. The analysis is currently undergoing.

In summary, three medicinal plants were selected from 70 Thai medicinal plants, which can be considered as the promising candidates for the treatment of obesity.

### Biography

Miss Wijitrappa Ruangaram completed her Master degree from Laboratory of Food Biochemistry, Graduate school of Agriculture, Hokkaido University, Japan and now currently proceeding her PhD in the same place. The main study is to focus on the anti-obesogenic potential of Thai medicinal plants both in *in vitro* and *in vivo* methods.

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## Impacts of Climate and Environmental Parameters on Bioactive Components and Plant Distribution of Licorice Collected from Hatay and Nizip Regions of Turkey

Doaa Husham Majeed Alssadi

Kumamoto University, Japan

### Abstract

Glycyrrhiza, also known as Licorice, is considered as an economically important plant due to its richness in bioactive compounds utilized in medicines as well as in food and cosmetics. However, the quality of wild and cultivated licorice does not always meet the standards of pharmacopeias and production industries. In Japan, glycyrrhizin has been used in the quality control of *Glycyrrhiza glabra* and *G. uralensis*, and any root sample that has low content of glycyrrhizin is considered unsuitable for usage. This need for high quality product requires the determination of possible factors that affect the bioactive content and licorice distribution. The result will help in establishing a good cultivation environment for high quality product especially in countries where licorice grows naturally. In this study, climate and environmental conditions of Hatay and Nizip areas of Turkey were examined in relation to glycyrrhizin, glabridin, and liquiritin contents from Turkish licorice root samples were analyzed and quantified. Statistical analysis showed that parameters, such as soil moisture content, land curvature, and altitude, have a significant impact on the glycyrrhizin and liquiritin contents. However, glabridin content was not affected by the studied factors. Creating an appropriate plan for future cultivation of licorice based on the obtained data requires a suitable system for plant distribution. Spatial models like GIS based frequency ratio model can be utilized in the estimations of land suitability for licorice cultivation in Turkey. It will also be useful in the prediction of habitat suitability in countries that have similar environmental characteristics.

### Biography

Miss Doaa Alsaadi is a PhD candidate, an enthusiastic researcher, and an active volunteer in educational, cultural and humanitarian activities. Doaa has been awarded MEXT scholarship (granted by the Japanese Ministry of Education, Culture, Sports, Science and Technology) for Master and PhD degrees in pharmaceutical science. She has high interest in promoting the cultivation of medicinal plants in countries effected by cultural, economical, and political problems.

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## Efficacy of *Anisochilus carnosus* Linn. As an Anti-Fungal Agent for Human Pathogens

Mujeera Fathima

University of Madras, India

### Abstract

Traditional medicine has been the source of drugs for curing most of the diseases afflicting humans. With advancement of science and increase in demand, most of the traditional drugs were replaced by synthetic drug analogues which became the drugs of choice for all

the ailments including cancer. Since time immemorial finding a proper cure for fungal diseases affecting man remained elusive. Many candidate plants are available that serve as drug sources for most of the fungal genera affecting man, but not all are very effective. . In our survey conducted at Kalrayan Hills, in Tamilnadu, India we came upon a plant called *Anisochilus carnosus*, belonging to the Family Lamiaceae which was used by the Malayali tribes for curing skin diseases. Hence we investigated the bio-active potential of this plant as an anti-fungal agent and tested the methanolic extract of the leaves against *Candida albicans*, *Candida tropicalis* and Trichoderma. It was observed that the zone of inhibition was higher than that of the control drug Flucanazole at a concentration of 600 µg of the extract for *C. albicans* and *C. tropicalis*. An ointment was formulated using the extract and administered to patients with fungal foot sores and compared with a commercially available cream and positive results were obtained. Therefore the methanolic extract was used determine the GC-MS spectrum to identify the bioactive principle and develop a potent anti-fungal compound to control human pathogens.

### Biography

Dr. Mujeera Fathima is presently working as Associate Professor and Head of the PG and Research Department of Botany for the past 22 years. She completed Ph.D. from the University of Madras in Botany. She has published 30 papers in National and International journals presented papers in National and International conferences. She is guiding 11 students for Ph.D. - three have completed. She have specialization in Ethnobotany, Herbal technology and endophytic fungi for isolation of Secondary metabolites. She have conducted a State Level Conference, 2 National conferences, a training programme for soft skills and workshops.

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## Molecular Docking Studies of Filarial B-Tubulin Protein Models with Antifilarial Phytochemicals

### Lalit Rajan Samant

*B J Wadia Hospital for Children, India*

### Abstract

Lymphatic filariasis affects millions of people worldwide, majorly people from lower socioeconomic strata, who cannot afford proper medication and seek local treatments, mostly involving the application or administration of plant extracts. Lymphatic filariasis is caused by filarial worms, and it has been reported that tubulin beta chain protein of these worms serves as an important drug target to inhibit their growth and development. Goal of study was to find phytochemicals which can be used as natural inhibitors of filarial worms by targeting tubulin beta chain protein present in them.

Homology modeling was carried out to model the target protein of lymphatic filariasis-causing organisms. A total of 105 phytochemicals were screened for their absorption, distribution, metabolism, excretion, and toxicity (ADMET) properties, and 12 phytochemicals which passed all the filters were used for comparative docking studies along with drug albendazole which is proved to bind to tubulin beta chain of roundworms. In silico molecular docking was performed using AutoDock Vina, and several phytochemicals were found to have better binding affinity than albendazole.

Based on binding affinity and ADMET properties, Hecogenin was selected as the best lead molecule. SwissDock was used to confirm hecogenin which has better binding affinity than albendazole against target proteins.

Our work illustrates that hecogenin and other potent phytochemicals such as (-)-epicatechin, akuammicine, apigenin, boeravinone A, boeravinone B, catechin, diosgenin, rhein, and ruscoegenin have promising antifilarial properties and can be used as natural inhibitors of tubulin beta chain of lymphatic filariasis-causing organisms.

### Biography

Mr. Lalit Rajan Samant is currently working as Quality Coordinator and Research Officer in Bai Jerbai Wadia Hospital for Children, Also 15189:2012 NABL QMS and Internal Auditor Certified Professional with Six Sigma White & Yellow Belt, over 9 years of experience in R & Diagnosis, and Training in Molecular Biology. He has published over 49 Publication & 2 Books and 1 Chapter; has 8 years of teaching experience. He is editor of 1 Journal and reviewer of 6 International Journals. He is attached to several Bodies as Life Time Member.



## Chamomile (*Matricaria recutita* L.) - Natural Substances and their Curative Effects

Ivan Salamon

University of Presov, Slovakia

### Abstract

Chamomile, *Matricaria recutita* L. was apparently sacred to the Ancient Egyptians. The essential oil is distilled from the freshly dried flowers (Flos Chamomillae); the oil of chamomile is pastel dark bluish and has a very strong smell. Application fields include dermatology, stomatology, otolaryngology, internal medicine, in particular gastroenterology, pulmonology, pediatry, and radiotherapy. The therapeutic effectiveness is in total due to the combined pharmacological and biochemical effects of several chamomile constituents, especially  $\beta$ -bisabolol. Gradually, the new chamomile variety "LIANKA" was bred at the University of Presov, Slovakia in last years. The essential oils of plants were extracted by hydro-distillation and analyzed by gas (GC) and liquid (LC) chromatography. The variety is characterized by its high percentage of sesquiterpenes: ( $\beta$ -bisabolol [54  $\pm$  2 %], chamazulene [18  $\pm$  2 %], the low contents of  $\beta$ -bisabolol oxides A and B [ $<$  3 %] and essential oil content are from 0.65 to 0.85 %). The main characteristic constituents of chamomile flowers are flavone derivatives: apigenin-7-glucoside is contained 0.33  $\pm$  0.01 and the total quantity of apigenins 0.48  $\pm$  0.02 [% of chamomile dry flowers]. Health Benefits of the chamomile natural substances: - anxiety, depression, - skin health, - weight loss, - inflammation, pain and - cancer prevention.

### Biography

Prof. Dr. Ivan Salamon is university teacher, scientist and managing investigator of several R & D projects of medicinal and aromatic plants. He is the principal author of the patent – the freeze-drying technology (lyophilization), as unique methods of anthocyanin isolation from medicinal plant small fruits, Chamomile variety "LIANKA" with the high content of  $\beta$ -bisabolol and Peppermint variety "KRISTINKA" with the high content of menthol of essential oils. Both varieties obtain the Certificates by the Community Plant Variety Office (CPVO) in Angers, France.

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## Antioxidant and Anti-inflammatory Activities of *Kigelia africana* (Lam.) Benth

Alice Nabatanzi

University of Pretoria, South Africa

### Abstract

*Kigelia africana* is used to manage inflammation among indigenous communities. In this study, the methanolic extract of *K. africana* and *Spathodea campanulata* leaves (SPK04), *K. africana* aqueous fruit extract (KFM02) and *K. africana* acetone fruit extract (KFM05) were subjected to antioxidant and anti-inflammatory assays. Antioxidant activity was evaluated using ABTS radical scavenging assay and MTT cell viability assay was used for cytotoxicity. The extracts were preincubated with enzymes and assayed for 15-LOX and COX-2 activity. Nitric oxide inhibitory effect of the extracts was evaluated and measurement of pro-inflammatory cytokines (IL-1 $\beta$ , TNF- $\alpha$ , IL-6), and the anti-inflammatory cytokine (IL-10) was done using ELISA kits. SPK04 had the highest antioxidant activity with a mean inhibition of 99.37 $\pm$ 0.56% and an IC<sub>50</sub> of 4.28  $\mu$ g/mL. SPK04 and KFM05 did not inhibit 15-LOX as their IC<sub>50</sub> values were  $>$  1000  $\mu$ g/mL. All extracts were safe on Vero cells. KFM02 was the best inhibitor of NO production and had the highest cell viability. SPK04 was the best COX-2 inhibitor while KFM05 expressed the strongest suppression effect for IL- $\beta$  and IL-6. KFM02 did not inhibit IL-6 at the highest concentration (200  $\mu$ g/mL). The order of suppression of TNF- $\alpha$  by the extracts differed across concentrations. All the extracts had no inhibitory effect against IL-10. This study presents for the first time the antioxidant and anti-inflammatory activity of *K. africana* and *S. campanulata* polyherbal extract. It is also among the very few studies that have reported the inhibitory effect of cytokines IL-1 $\beta$ , TNF- $\alpha$ , IL-6, IL-10 by *K. africana*.

### Biography

Dr Alice Nabatanzi is a permanent University staff member at Makerere University, Kampala, Uganda (East Africa). She holds a MSc. and PhD in Natural Products Technology and Value Chains (Phytomedicine and Phytonutraceuticals). Currently, Alice is a Carnegie Early

Career Research Leaders Fellow (ECRLF) at Future Africa, University of Pretoria, South Africa. She is researching on the anti-inflammatory and anti-cancer properties of *K. africana* which is an iconic species in Africa because of its medicinal properties. Nabatanzi is actively participating in teaching, research and supervision of student projects. She has published 8 scientific papers in peer reviewed journals.

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## Chronic Oral Safety Study of the Aqueous Extract of *Combretum Molle* Twigs on Biochemical, Haematological and Antioxidant Parameters of Wistar Rats

**David MIAFFO**

*University of Maroua, Cameroon*

### Abstract

*Combretum molle* R.B/G. Don (Combretaceae) is a graceful deciduous shrub, distributed in tropical Africa and used in traditional medicine in the treatment of malaria, diabetes, and bacterial and cardiovascular diseases. The long-term toxicity study was conducted in accordance with OECD 408 guidelines. Rats were divided in groups and treated orally with the aqueous extract of *Combretum molle* (CMAE) at doses of 62.5, 125 and 250 mg/kg for 6 months. The general behavior and signs of toxicity of the rats were daily observed. At the end of treatment period, urine and blood samples were collected for hematological, biochemical and antioxidant estimations. The results showed that no mortality and visible signs of the toxicity were recorded in all experimental animals. All doses of CMAE produced an increase in high density lipoprotein cholesterol, white blood cells, platelets, glutathione, and a decrease in low density lipoprotein cholesterol and malondialdehyde rate. CMAE at doses of 125 and 250 mg/kg decreased in serum proteins and aspartate amino transferase activity, and increased catalase activity. In addition, CMAE (250 mg/kg) significantly decreased in alanine aminotransferase activity and the level of triglycerides, very low density cholesterol, total proteins and creatinine, and increased in renal clearance, red blood cells, hemoglobin, hematocrit and superoxide dismutase activity. At the end of this study, no signs of major intoxication was noted during 6 months of treatment. These results suggest that long-term consumption of CMAE at the therapeutic dose (250 mg/kg) presents low risks to human health.

### Biography

Mr. David MIAFFO is senior lecturer in the Department of Live and Earth Sciences, Higher Teachers' Training College, University of Maroua. Her research interest includes Animal Physiology and Phytopharmacology: Therapeutic activities of natural substances of plant origin.

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## A Review of *Drosophila* and Medicinal Plants Research: Speed and Endless Possibilities

**Chinonye A Maduagwuna**

*University in Jos, Nigeria*

### Abstract

*Drosophila melanogaster* is an established model for host- pathogen interactions because of the conservation of about 60% of human genes in the core proteome of the fly. The challenge of emerging and resistant infections cannot be overemphasized especially with the current global pandemic. The scramble for effective treatment and preventive vaccines cannot be complete without a comprehensive and detailed foray into medicinal plants especially of Caryota no, a palm which has been poorly studied. A review of dosage and LC50 determination, antioxidants, survival and longevity studies was done for the different plant extracts. Methods of infecting flies acutely by septic wounds or chronically by oral infection were explored with transgenic strains of biofilm forming and nonbiofilm forming *Pseudomonas aeruginosa*. Fly infection was also established and the immune system of both the fly and bacteria were assessed using gene expression studies for induction or repression. Various values were obtained and compared for the different parameters assayed. It was also observed that drosophila genome could easily be manipulated to produce transgenic strains to model various disease processes. Similar works were referenced with evidence concerning prospects with drosophila in study of infectious diseases. Finally, it was found from results obtained from these studies that there was concordance between these assays and those done in animal

studies with swiss rats, the *in vitro* assays and lastly, the *in silico* studies. These reveal that this fly model is an inexpensive and fast process for *in vivo* assays of plant products.

### Biography

Dr Chinonye A Maduagwuna is a medical doctor, researcher and university lecturer. She is interested in high-throughput studies (computer aided drug design, drosophila research and advanced molecular techniques) in efficacy of medicinal plants and potent phytochemicals. She believes in the future of phytotherapy over conventional medical therapy. She also opines that sincerity and a collaborative effort across the entire spectrum of the biomedical sciences rather than a narrow approach would spring medical practice forward in the next century. This is a fact in low resource settings as found in developing countries of the world from where she operates.

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## Medicinal Forests & Ethnogardens: New Production and Resistance Spaces of Brazilian Amazon Forest People

### Patricia Chaves de Oliveira

*Federal University of Western Pará-UFOPA, Brazil*

### Abstract

The fabulous knowledge about medicinal plants that forest populations in the Amazon, the largest tropical forest in the world, present, is currently threatened by the opening of prospectors, advance of soybean monoculture, logging among other forms of land use, which not only alter the landscape in indigenous and afro descendants territories, but slowly promote the erosion of traditional knowledge of medicinal flora. From this scientific problem and based on ethnobotanical studies with traditional populations in the last two decades in the Tapajós River Basin, new spaces (models) of production of medicinal plants were theoretically created with the objective of not only conserving medicinal flora, but contributing to the resistance and struggle of traditional peoples with threatened territories. The territory and the traditional knowledge about medicinal plants, in an inseparable binomial, where protecting and conserving one of the factors means the survival of the other. This research analyzed different models of composition of Medicinal Forests and Ethnogardens in different ecosystems and traditional peoples. The results demonstrated models with high medicinal diversity in medicinal forests, as well as models of ethnogardens with technological input able to bite production spaces, historically run by indigenous and Afro-descendants. It was concluded that the new production spaces of medicinal plants, here called Medicinal Forests and Ethnogardens can stimulate a new forest bioeconomy focused on the production chain of medicinal plants in the Brazilian Amazon. Such scenarios would also function as hot spots of resistance of traditional populations in the face of current threats in their territories.

### Biography

Dr. Patricia Chaves de Oliveira is Agronomic Engineer, Master in Agronomy and PhD in Agrarian Sciences. She is Associate Professor IV of the Federal University of Western Pará (UFOPA) - Institute of Biodiversity and Forests where she develops research in the area of Ethnobotany and Ecophysiology of Amazonian vegetation, as well as agrotechnological extension activities aimed at strengthening traditional communities in the Tapajós River Basin. It has coordinated projects for the local, regional and international development of traditional populations in the Legal Amazon in the last two decades under the funding of national and international organizations.

## Brainstem and Thalamic Haemorrhage Following Cannabis Consumption

Ruchika Tandon

*Sanjay Gandhi Postgraduate Institute of Medical Sciences, India*

### Abstract

**Introduction:** Cannabis, an illicit recreational substance, is considered to be relatively safe by public. However, potential health risks, particularly cardiovascular risks, are a cause of concern. Ischaemic and rarely haemorrhagic strokes may occur with cannabis use. Stroke usually ensues following chronic cannabis use or with concomitant use of tobacco and cannabis.

**Case Report:** A 23-year-old man, brought in an unconscious state with suspected poisoning had a Glasgow Coma Scale score of 7 with hypertonia, hyper-reflexia and unresponsiveness to pain. Planters were non-elicitable. Haemogram, electrolytes, renal and hepatic function tests and coagulation studies were normal. He regained consciousness after 2 days of conservative management, with imbalance in walking and diplopia persisting. Upgaze, downgaze and bilateral lateral gaze restriction, with nystagmus on lateral gaze, was observed. He admitted having consumed local cannabis called 'bhang' (around 5–10 g) for the first time. Imaging revealed haemorrhage in left thalamus and brainstem. He and his family had no history of hypertension, other addictions, diabetes, coronary artery disease or stroke and no premonitory symptoms, except for sleepiness following 1 hour of cannabis consumption. His serum homocysteine levels, vasculitic profile, echocardiography and carotid Doppler were normal; hospital stay was unremarkable, and he recovered in 4 weeks, with persistent mild headache. Cannabis is associated with intracranial haemorrhage, but brainstem and thalamic involvement is very rare. Supine hypertension, blood pressure fluctuations and impaired cerebral autoregulation maybe possible mechanisms.

**Conclusion:** Deep-seated intracranial haemorrhages may result, following first-time cannabis use or withdrawal and this fact must be kept in mind while contemplating cannabis use for medical or recreational purposes.

### Biography

Dr. Ruchika Tandon joined as Assistant Professor (Neurology) at SGPGIMS, Lucknow, India in 2018 after working as an Assistant Professor in KGMU, Lucknow (2015-2018). Completed MBBS (2003) and MD (Medicine) (2008) from GSVM, MC, Kanpur and DM (Neurology) (2013) from SGPGIMS, Lucknow. Have 15 research publication in National and International journals. Awarded "KC Burman award for humanism in medicine" and 2<sup>nd</sup> prize in clinicosocial case presentation in 'ICGGM 2015'. Spreading awareness through Radio talks and speaker and chairperson in various conferences. Have 12 book chapters.

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## Medical Cannabis in Older Adults - Treatment Protocol and Initial Results

Addie Ron

*NiaMedic Healthcare and Research Services, Israel*

### Abstract

Older adults may benefit from cannabis treatment for various symptoms such as chronic pain, sleep difficulties, and others that are not adequately controlled with evidence-based therapies. However, currently, there is a dearth of evidence about the efficacy and safety of cannabis treatment for these patients. This article aims to present a pragmatic treatment protocol for medical cannabis in older adults. We followed consecutive patients above 65 years of age prospectively who were treated with medical cannabis from April 2017 to October 2018. The outcomes included treatment adherence, global assessment of efficacy and adverse events after six months of

treatment. During the study period, 184 patients began cannabis treatment, 63.6% were female, and the mean age was 81.2 ± 7.5 years (median age-82). After six months of treatment, 58.1% were still using cannabis. Of these patients, 33.6% reported adverse events, the most common of which were dizziness (12.1%) and sleepiness and fatigue (11.2%). Of the respondents, 84.8% reported some degree of improvement in their general condition. Special caution is warranted in older adults due to polypharmacy, pharmacokinetic changes, nervous system impairment, and increased cardiovascular risk. Medical cannabis should still be considered carefully and individually for each patient after a risk-benefit analysis and followed by frequent monitoring for efficacy and adverse events.

## Biography

Dr. Addie Ron is an Israeli physician certified in Geriatrics and Family medicine with much experience in patient care and Medical Management. He holds a Master's degree in gerontology from Haifa University and completed a Geriatrics Fellowship program at Boston University Medical Center. He served as the North District Geriatric Director, in charge treating more than 40,000 elderly patients. In the last 3 years, he is involved in the field of Medical Cannabis treating older adults and serving as the Medical Director of Niamedic. Niamedic is a healthcare, data, and research services company operating medical clinics integrating medical cannabis treatments.

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## Cannabidiol and Cannabigerol Induce Neuroprotective and Neuromodulatory Effects on Rat Hypothalamic Isolated Cells

### Giustino Orlando

G. d'Annunzio University of Chieti Pescara, Italy

### Abstract

**Background:** Cannabidiol (CBD) and cannabigerol (CBG) are non-psychotropic terpenophenols isolated from *Cannabis sativa*, which, besides their anti-inflammatory/antioxidant effects, are able to inhibit, the first, and to stimulate, the second, the appetite although there are no studies elucidating their role in the hypothalamic appetite-regulating network. Consequently, the aim of the present research is to investigate the role of CBD and CBG in regulating hypothalamic neuromodulators. Comparative evaluations between oxidative stress and food intake-modulating mediators were also performed.

**Methods:** Rat hypothalamic Hypo-E22 cells and isolated tissues were exposed to either CBD or CBG, and the gene expressions of neuropeptide (NP)Y, pro-opiomelanocortin (POMC) and fatty acid amide hydrolase were assessed. In parallel, the influence of CBD on the synthesis and release of dopamine (DA), norepinephrine (NE), and serotonin (5-HT) was evaluated. The 3-hydroxykinurenine/kinurenic acid (3-HK/KA) ratio was also determined. Results: Both CBD and CBG inhibited NPY and POMC gene expression and decreased the 3-HK/KA ratio in the hypothalamus.

The same compounds also reduced hypothalamic NE synthesis and DA release, whereas the sole CBD inhibited 5-HT synthesis.

**Conclusion:** The CBD modulates hypothalamic neuromodulators consistently with its anorexigenic role, whereas the CBG effect on the same mediators suggests alternative mechanisms, possibly involving peripheral pathways.

## Biography

The pharmacological research activity of Prof. Giustino Orlando is focused on the following main research fields: Role of endogenous peptides on food intake and energy expenditure control; Protective effects of medicinal plants and extracts, with particular regards to inflammatory and neurodegenerative diseases; Pharmacology of central monoaminergic system; Optimization of preclinical pharmacological models for the study of the mechanism of action of drugs.

Prof. G. Orlando is co-author of 103 publications in peer-reviewed international journals. Currently, Prof. Orlando is also scientific responsible of several projects focusing on the study of the pharmacological properties of *Cannabis sativa* phytochemicals.

## Industrial Hemp as a Source of Anti-Inflammatory, Anti-Proliferative and Antimycotic Agents

Claudio Ferrante

G. d'Annunzio University of Chieti Pescara, Italy

### Abstract

**Background:** Industrial hemp is traditionally cultivated as a valuable source of fibers and nutrients. Multiple studies already demonstrated antimicrobial, anti-proliferative, phytotoxic and insecticide effects of the essential oil. In the present study, we investigated the water extract from inflorescences of industrial hemp.

**Method:** The extract was assayed for phenolic compound content, radical scavenger/reducing, chelating and anti-tyrosinase effects. Through an ex vivo model of toxicity induced by lipopolysaccharide (LPS) on isolated rat tissues, we explored the extract effects on serotonin, dopamine, kynurenine and prostaglandin (PG)E2 levels. Anti-proliferative effects were also evaluated against human colon cancer HCT116 cell line. Antimycotic effects were investigated against *Trichophyton rubrum*, *Trichophyton interdigital*, *Microsporum gypseum*. Finally, in silico studies, were conducted in order to predict putative targets.

**Results:** Hemp extract inhibited LPS-induced reduction of serotonin and increase of dopamine and kynurenine turnover. Additionally, the reduction of PGE2 levels was observed. The extract inhibited the HCT116 cell viability, the growth of *T. rubrum* and *T. interdigitale* and the activity of tyrosinase, whereas docking studies highlighting the inhibition of lanosterol 14- $\alpha$ -demethylase (induced by rutin) further support the observed bio-pharmacological effects.

**Conclusion:** The present findings suggest industrial hemp as a promising source of anti-inflammatory and antimicrobial agents.

### Biography

The pharmacological research activity of Dr. Claudio Ferrante is focused on the following main research fields: Role of endogenous peptides on food intake and energy expenditure control; Protective effects of medicinal plants and extracts, with particular regards to inflammatory and neurodegenerative diseases; Pharmacology of central monoaminergic system; Optimization of preclinical pharmacological models for the study of the mechanism of action of drugs.

Dr. C. Ferrante is co-author of 84 publications in peer-reviewed international journals. Currently, Dr. Ferrante is also scientific responsible of several projects focusing on the study of the pharmacognostic and pharmacological properties of *Cannabis sativa* (industrial hemp) extracts and phytochemicals.

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## Role of Marijuana Components on the Regenerative Ability of Stem Cells

Henry Miller

Cooper University Hospital, USA

### Abstract

**Background:** Stem cell therapy promotes tissue regeneration and wound healing. 1,2 Efforts have been made to prime stem cells to enhance their regenerative abilities. 3-8 Certain marijuana components, namely the non-psychoactive cannabidiol (CBD) and psychoactive tetrahydrocannabinol (THC), are defined as immunomodulators. 9 We test whether two sources of stem cells, primed with CBD or THC, would demonstrate improved regenerative abilities.

**Methods:** Human adipose derived stem cells (ASCs) and bone marrow derived stem cells (BMDSCs) were treated with low (300nM) or high (3uM) concentration CBD. Transwell migration and MTT proliferation assays were performed. Next, porcine ASCs and BMDSCs were isolated from a single pig, and treated with either low or high concentrations of CBD or THC, and a migration assay was performed. Finally, a wound healing scratch assay in porcine primary fibroblasts (PFs) was performed, co-cultured with the cannabinoid-treated ASCs.

**Results:** CBD priming at low concentration induces migration by 180% ( $p < 0.01$ ) in porcine ASCs, and by only 93% ( $p < 0.02$ ) in porcine BMDSCs. In porcine stem cells, THC priming at low concentration induces migration by 91.6% ( $p < 0.01$ ) in ASCs, and by only 44.3% ( $p < 0.03$ ) in BMDSCs. Compared to PFs co-cultured with untreated ASCs, PFs co-cultured with low CBD-primed ASCs had 75% faster wound closure at 18h ( $p < 0.01$ ).

**Conclusion:** CBD and THC priming of ASCs and BMDSCs, particularly at lower doses, enhances a number of regenerative parameters, suggesting that these major marijuana components may improve stem cell-based therapies.

### Biography

Mr. Henry Miller, is a third year general surgery resident at Cooper University Hospital in Camden, New Jersey. He recently completed a one year research fellowship, where his team studied the effects of cannabinoids on various sources of stem cells. They found that multiple sources of stem cells can be pre-treated with both THC and CBD to improve their regenerative abilities. Their findings may be relevant from a surgical perspective, both in terms of pre-operative risk assessment, and post-operative wound healing optimization. Additionally, these findings may impact future stem cell treatment, by optimizing the activity of stem cells.

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